Custom-Line

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ATLAS

6 HO RAIL-ROADS YOU CAN BUILD

Step-By-Step Construction

BY JOHN ARMSTRONG

Illustrated by Thaddeus Stepek

Fred S.

SIX
HO RAILROADS
YOU
CAN BUILD

TEXT AND TRACK PLANS BY JOHN ARMSTRONG

ILLUSTRATED BY THADDEUS STEPEK

ATLAS

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HILLSIDE, NEW JERSEY

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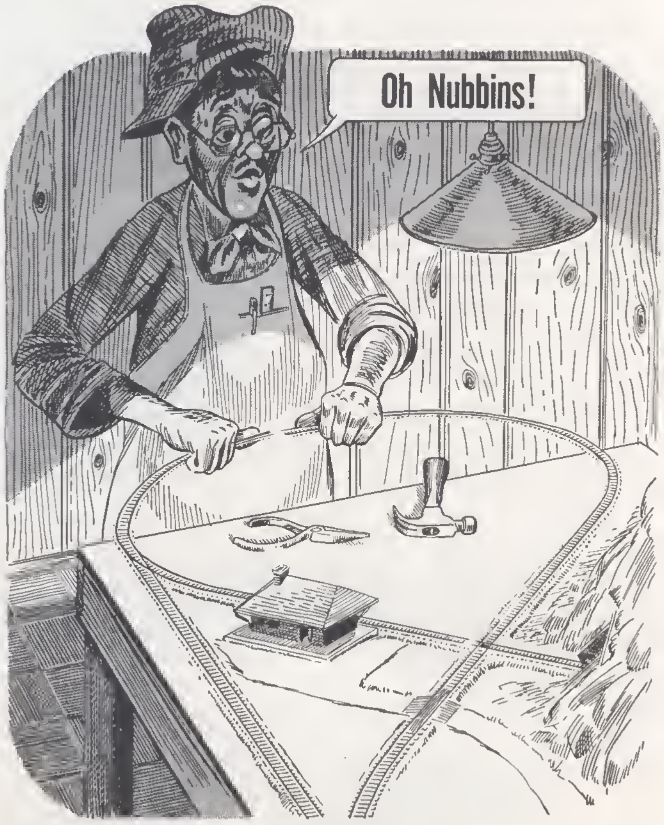
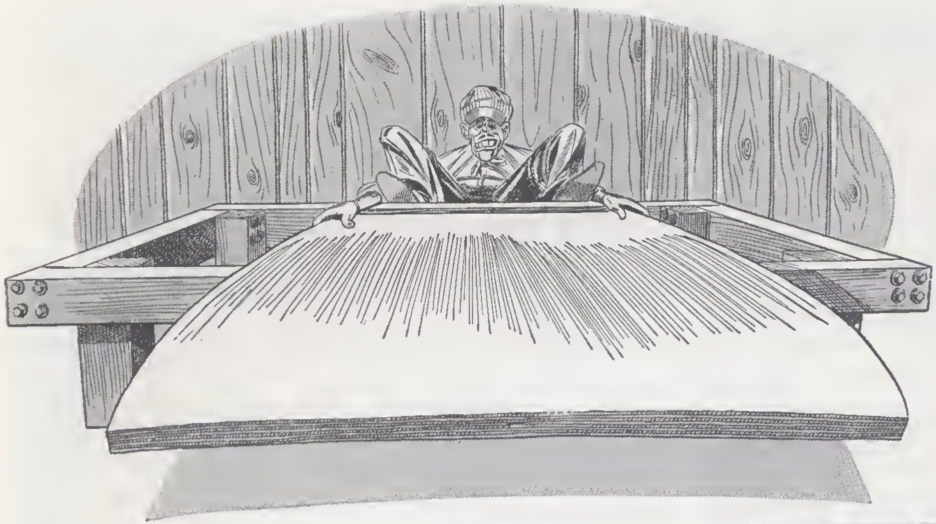
INTRODUCTION

YOU get a lot more satisfaction out of the sport of archery after you've mastered the technique well enough that your shots all hit the target and you don't spend half your time looking for lost arrows. Likewise, golf begins to be a pleasure when most of your shots are down the fairway and lost balls become the exception rather than the rule. The availability of excellent HO gauge car and locomotive kits and even ready-to-run rolling stock, together with Atlas Custom-Line track components in wide variety, has virtually eliminated the "duffer" stage in scale model railroading — as a rank beginner you can have fantastically detailed trains running with great dependability in a time that would have seemed utterly impossible to the pioneer modeler of a few years ago. It's much as though you could now learn to go around the course in par your second time out.

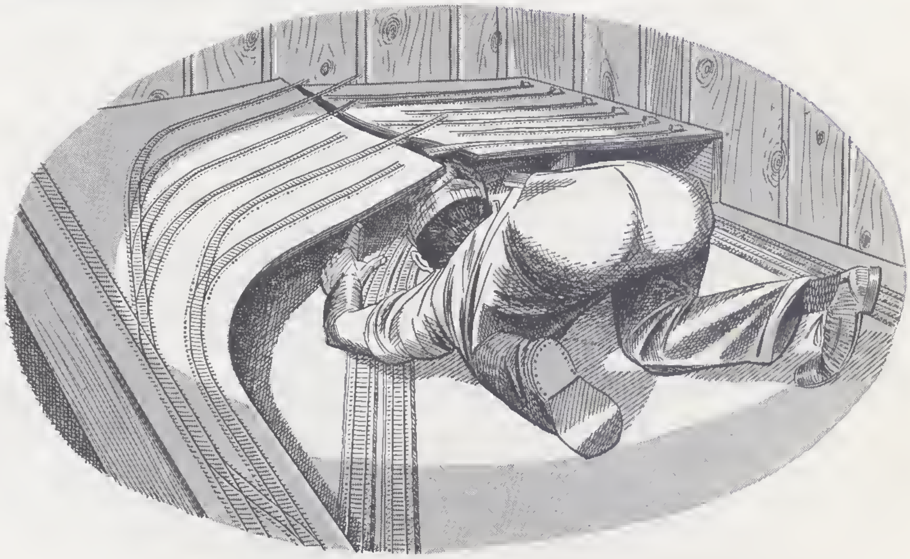
Model railroading is a vastly more creative hobby, though, in which the goal is to build a *railroad*, not just a track arrangement with a train going around it. A railroad, real or miniature, is the result of skillfully combining a multitude of components into a system that does what it's supposed to — producing transportation in the case of the real thing, or producing the illusion of transportation if it's a model pike. The best model railroads in existence today do a highly satisfactory job of creating this illusion, considering the limitations of space into which they must be fitted, and many do it without using rolling stock, track or electrical components one whit



EVEN A SIMPLE PIKE TAKES A BIT OF PLANNING.



HAVING SOME IDEA OF THE RIGHT SIZE OF MATERIAL TO USE HELPS.



FORGETTING TO FINISH SOMETHING ON THE LOWER LEVEL FIRST, CAN BE AWKWARD.

better than those you can assemble right now from readily available kits and supplies.

Most of these top-notch railroads, however, have been developed by the frustrating process of doing much of the same planning, construction and testing two or three or even more times. Many an old-timer has built several pikes over the years or has at least once reduced his layout almost to the raw-material state and started afresh to rework it into something that would give more satisfaction. For every persevering modeler who eventually comes through with a pleasureful railroad, there are many others who drift away from the hobby after a false start or two and miss out on the deep satisfaction that comes from having built a pike that looks and acts like the dream railroad in mind from the start. These frustrated empire-builders make no other converts to the hobby. So, the purpose of this book is to help you build for yourself a soul-satisfying *railroad* — not just an "outfit" — on the first attempt, and then to continue on as an ever-increasingly fascinated model railroader.

The first thing we've done for you in the six assorted types of railroads described is to plan Atlas-Track arrangements which will fit accurately into spaces of the size and shape commonly available to the beginning railroader. These railroads have all been constructed and you can rest assured that the track will fit into the space shown and that the items called out in the bill of material are precisely those that are required. If you already have some track that came with your first train-set, of course, you will deduct these items from your shopping list.

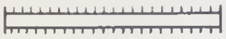
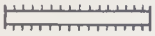
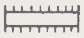
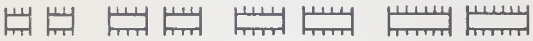
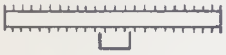
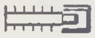
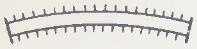
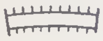
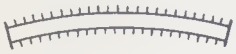
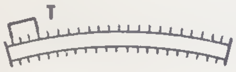
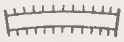
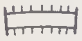
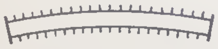
Next, we've told you what materials are suitable to use for constructing the table or framework that forms the foundation of your railroad, so that you won't find yourself in Egbert's position of having spent an unnecessary pile of dough making his pike so rugged he can't lift it. Of course, a more typical problem is that of the neophyte who makes his framework too flimsy in spots and ever afterward is plagued with poor operation he can do nothing about without a complete rebuilding job. You can and probably will make minor changes in sizes and types of material to suit what's available, but we have given you a standard that has been proved out in service against which to judge the effects of these variations.

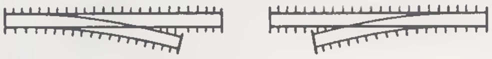
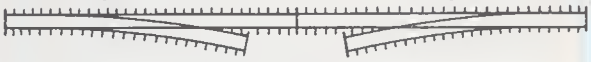
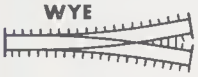
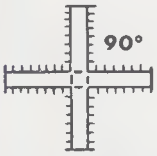
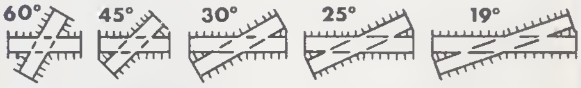
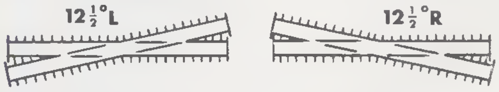
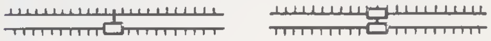
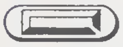
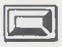
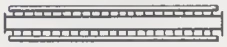
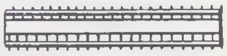
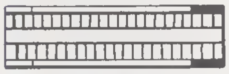
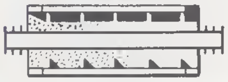
You can take all the proper parts and still put them together in the wrong order, so we've tried to steer you clear of the more important ways in which you can get fouled up. Once you have the track and material on hand, it's a mighty powerful temptation to start right in a-sawing and a-nailing, but please do read the text over a time or two first, so that you can devise your own new way of doing things backward rather than getting off on the wrong foot in the old-fashioned ways which we warn you against.

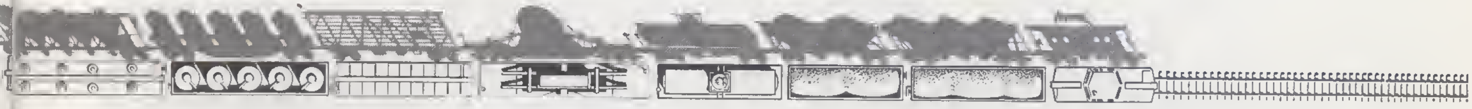
Many of the construction steps for a larger or more complicated railroad are essentially the same as for a more modest one, and we haven't the space to repeat them in each case. Take a look at the discussion on the construction of Railroad A for example, therefore, before plunging into the assembly of any of the later pikes.

It should be noted, however, that with Atlas Custom-

KEY TO TRACK COMPONENT DESIGNATIONS

			LENGTH OR AMOUNT OF CURVATURE
		Full straight section	9″
	6″	6″ straight section	6″
	3″	3″ straight section	3″
	1″ 1½″ 2″ 2½″	Snap Track kit 2-1″, 2-1½″, 2-2″, 2-2½″ sections	
	T	Straight terminal section	9″
	B	Bumper	3½″
	15	Full section 15″ radius	30°
	½-15	Half section 15″ radius	15°
		Full section 18″ radius	30°
	T	18″ radius terminal section	30
	½-18	Half section 18″ radius	15°
	⅓-18	Third section 18″ radius	10°
	22	Full section 22″ radius	22½

			LENGTH OR AMOUNT OF CURVATURE
	4R 4L	No. 4 right and left-hand turnouts	12½°
	6R 6L	No. 6 right and left-hand turnouts	10°
	WYE	Wye turnout each leg	10°
	90°	90° Snap crossing	6″
	60° 45° 30° 25° 19°	Crossings, lengths l to r: 3″, 3″, 4″, 4½″, 6″	
	12½°L 12½°R	Left and right-hand 12½° crossings	
		Insulated rail joiner, one rail and both rails	
	P-12	3″ high pier	
	P-1 P-2 P-3 P-4 P-5 P-6 P-7 P-8 P-9 P-10 P-11	¼″ thru 2¾″ piers by ¼″ increments	
	PIER GIRDER		9″
	DECK TRUSS		9″
	WARREN TRUSS		9″
	GIRDER BRIDGE		9″



Line components you often have a second or third chance to come through unscathed if you make a minor goof — it's usually possible to re-lay track and roadbed without damage or much lost time. At various stages we remind you of certain checks of alignment, spacing, etc., that are advisable so that any mistakes will be caught while they're still minor. If you see something that looks peculiar at any stage, check and correct it carefully right then; you'll be glad later on that you did.

The most fundamental thing to do right from the start is to select the type of railroad that suits your desires and capabilities as well as your space. That's why there's some discussion at the start of each section on the strong and weak points of the particular railroad from an operation and appearance standpoint. Unfortunately, every model railroad must be a compromise in some degree — even if you had the Los Angeles Coliseum and a million dollars so that you could consider building a scale model of the entire Santa Fe system, you'd still have to make some changes so that you could get near enough to the track at all points to see the trains. Some of these little railroads favor tricky operating capabilities, others emphasize railroadlike appearance. Think a bit about the things you're more interested in before making a final selection.

To help you visualize better just how much rolling stock a particular track plan will accommodate and how the trains will look on it, the train strips on top and bottom of the track plans are reproduced to the same scale.

The thing that has traditionally reduced otherwise strong men to jelly in the scale model railroading business has been two-rail wiring. Atlas components now available make not only the basic wiring theory but the practical hooking up of the circuits a perfectly straightforward process in which success is assured whether or not you have a very clear idea of why the wires go where they do. It is also unnecessary to know what goes on inside those Atlas Controllers, Selectors and other little black boxes that enable you to hook up an advanced type of control system in nothing flat. Therefore, we don't go into the reasoning behind the wiring of these railroads, but simply furnish detailed information on all necessary connections. The companion Atlas publication *Wiring Your HO Layout* should be consulted if you wish to make any significant variations in wiring in order to allow you to make additional operating maneuvers.

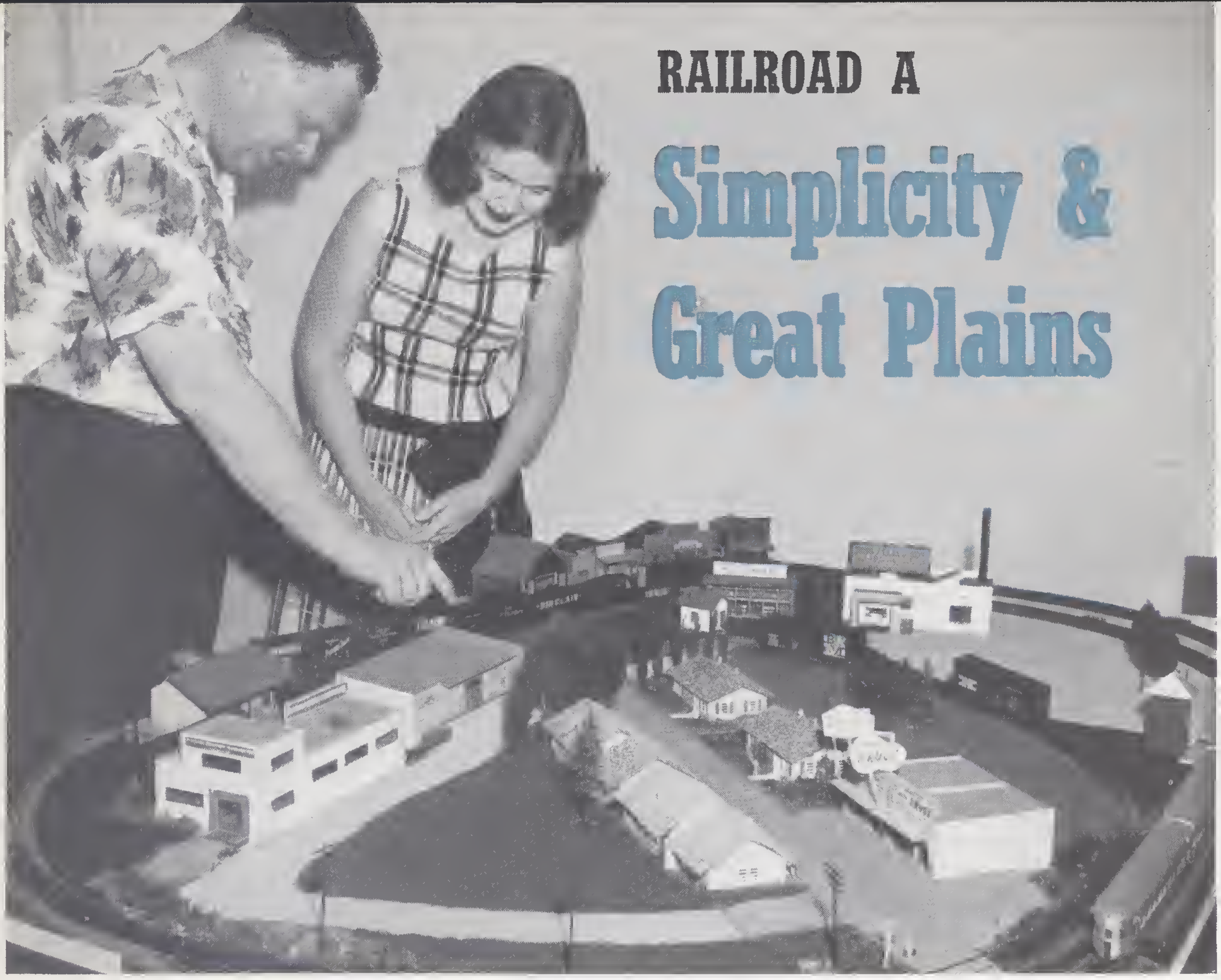
Now that ready-to-run HO locomotives of excellent quality retail at low prices, it's a fair bet that there will be very few one-loco railroads in the future. That's why all of the railroads described here show a control system accommodating two trains with separate "cabs" giving individual speed and direction control to each. It is strongly recommended that you put in all the insulated (plastic) joints indicated at the time you lay your track, whether or not you have by that time acquired a second power pack or locomotive. Make temporary connections between the terminal sections for interim operations.

It's the scenicking that makes your version of one of these railroads look like the Boston & Maine or the Southern Pacific, so this is the element in which you will most want to exercise your ingenuity in making your railroad truly your own creation. It is also the part of model railroading in which you can make the widest variations in method without affecting operation. Therefore we discuss scenicking in much more general terms, describing a few basic techniques of proven practicability which should be considered simply as one of many ways to accomplish the purpose. Pay close attention to the few warnings given (such as that very important one about keeping the rails and feed wires electrically insulated from the screen-wire scenery base) and you can write your own ticket, coming out with something that's going to be a joy and comfort to behold and of assured performance as well. Go to it!

YOU BUILT IT — IT LOOKS LIKE A RAILROAD — AND IT WORKS! WHAT MORE COULD A MAN WANT?

RAILROAD A

Simplicity & Great Plains



All photographs by Tony Mancuso.

USING ONLY COMMERCIALLY-AVAILABLE STRUCTURES, DYED SAWDUST FLOCKING TO REPRESENT GRASS, CRUSHED STONE AND CINDERS, A FEW TREES AND ACCESSORIES, A REALISTIC SCENE CAN BE CREATED IN JUST A FEW HOURS AFTER THE TRACK IS LAID. LATER WORK WITH SMALLER SCENIC ITEMS AND SCRATCH-BUILT STRUCTURES CAN BRING SCENE UP TO SUPER-DETAIL STANDARDS OF TODAY'S ROLLING STOCK AND TRACK.

THE Simplicity and Great Plains, as its name implies, is a little railroad which can be placed into operation with a minimum of effort and which has no mountainous scenery. It fits on a standard four by six foot sheet of heavy plywood and so is readily portable; this size railroad is still small enough to go up apartment-house stair wells without difficulty.

Despite its small size, it's a railroad that can furnish operating fun for many a year because it features single-track on its simple oval main line. With two passing tracks available, each with a turnout at each end, two trains can run fairly continuously in opposing directions. They will meet each other twice per lap, so you as the dispatcher will be kept plenty busy (and interested). Three spur tracks on which are located productive industries provide ample reason for switching maneuvers. Trains must be kept short because of the limited siding length, however, so this is not a particularly good railroad for you if you are interested in the larger locomotives. You can run *one* fairly long train at a time by having the other one short enough to fit into the passing tracks, but that's about it.

On the other hand, if the flat-bed scenicking shown leaves you cold, it is always possible to add hilly terrain (by the methods described in connection with Railroad E) to this track plan, improving its appearance at some cost in reduced portability.

If the Simplicity and Great Plains is about your speed, let's stop talking and start building. First, buy the plywood sheet called for in the materials list on the next page. If obtainable in this size and thickness at your lumber dealer's, get the cheaper, sheathing-grade plywood known as "Plyscord" or "C-D." This has minor defects on both sides, which you'll cover with scenicking anyway, but is just as rigid as the more expensive grades which have one or both surfaces defect-free. A sheet of ¾″ plywood of this size weighs about 54 pounds, so if you expect to move your railroad frequently, the considerably lighter framed-top construction described on page 14 may be more suitable and worth the extra effort.

A railroad of this size may be set up for operation in many different ways — on two card tables, on the backs of three or four chairs, or on its own legs, for example. If it is to be set up permanently, you will do well to use 2″ by 2″ wood legs attached to the top by cleats and suitably braced; if occasionally or frequently the railroad is going to be banished to storage, commercial folding-leg assemblies as shown on the next page are a time-saving answer. In considering the practicalities of having a railroad at all, it's well to remember that a 4 by 6-footer *can* be tucked away underneath a standard double bed. In any case, plan on having your railroad at considerably higher level than the standard 30″ table height. If you make the legs yourself, start out with them about 46″ or 48″ long and see if this doesn't let you get a good close-up of the trains; if you don't like it that high, you can always remedy the

WHAT IT TAKES:

Atlas Track Products

9" straight section	7
3" straight section	1
Snap-Track kit	1
Bumper	3
Full section 18" radius	11
18" radius terminal section	7
Half section 18" radius	4
Third section 18" radius	7
No. 4 right-hand turnout	1
No. 4 left-hand turnout	4
No. 6 right-hand turnout	1
Wye turnout	1
Atlas rail joiners	1 box
Plastic rail joiners	1 dozen

Roadbed Material

Atlas cork roadbed (3 ft. sections)	9*
Atlas cork switch block, No. 4	5
Atlas cork switch block, No. 6	1
Atlas cork switch block, Wye	1
⅝" or ¾" No. 19 or No. 18 flat-head wire nails	¼ lb.

*Note: If roadbed at turnouts is built up as shown on p. 10, omit switch blocks and obtain 12 sections of roadbed instead of 9.

Electrical Control Items

Single-train power supply with 16 volt a.c., 12 volt d.c. output, speed control, reversing switch, and circuit breaker	2
Atlas selector	2
Atlas remote control switch machine	7
Atlas switch control box	7
Train power wire (No. 20 or No. 18, No. 18 preferred)	25 ft.
Switch machine hookup wire (No. 22 or heavier)	50 ft.

Foundation Material and Miscellaneous

⅝" or ¾" plywood, 4 x 6 ft.	1 piece
Gray or brown flat waterbase latex paint	½ pint
Leg material or folding-leg units	See Text

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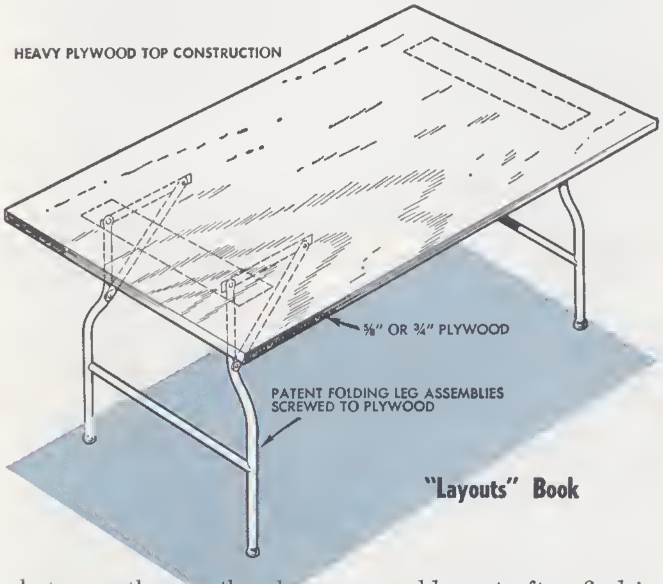
situation with a saw. If you use the commercial folding legs, you'll probably want to extend them a foot or so with pipe to get the railroad up to at least 42" elevation.

Now that you've got your table-top plywood, paint it some neutral color typical of the soil in the territory where your railroad is located — light gray, reddish brown or whatever other earth color you would most often find in the ditch alongside the railroad track. This preliminary painting will save having to do a more meticulous job later on when the track is in place and will also hide the plywood grain all over the layout until you get around to finishing up the scenicking. If the model railroad bug has strongly infected you, you'll be in a hurry to get on with the job, so use a quick-drying water-base latex paint in an opaque color for this twenty-minute job and you'll be able to start laying out the track that same evening.


HEAVY PLYWOOD TOP CONSTRUCTION
⅝" OR ¾" PLYWOOD
PATENT FOLDING LEG ASSEMBLIES SCREWED TO PLYWOOD
"Layouts" Book

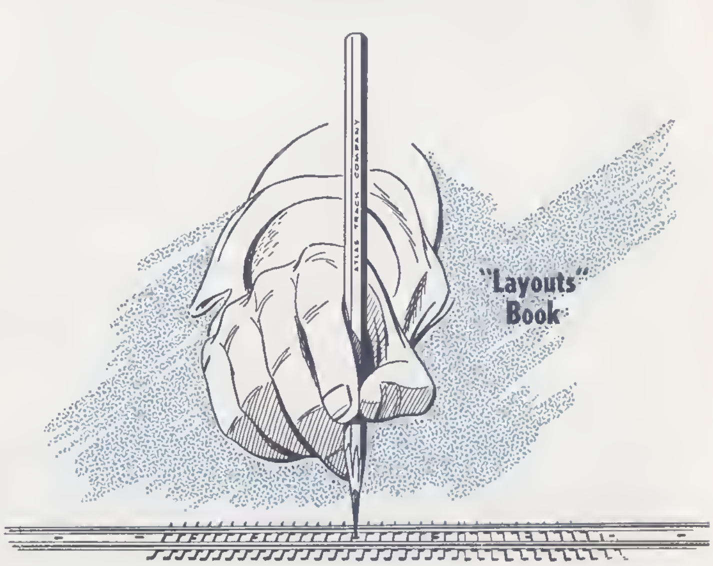
LAYING OUT THE TRACK

Next, take the Atlas Track called out in the list and snap it together in the pattern shown in the diagram on page 8. For the time being, do not bother to subsitute plastic rail joiners at the points called for. At this stage the track is quite flexible, so move it around on the plywood until the ends and sides of the basic loop are all about the same minimum distance from the edges of the platform and until all curves are free from kinks at the points where the sections snap together. If it persists in looking different from the diagram, check to see that you have the parts assembled in the proper order, the No. 6 turnout where it belongs, etc.

When you're satisfied with the arrangement, tack it down in a few places by driving the ⅝" nails part way into the plywood through the holes in the center of the crossties. Leave the nail heads well above the top of the rail, since we're soon going to remove the track. Now proceed to mark the center line of the track as shown, making a pencil mark every few ties. Getting the marks in the center by eye is accurate enough. Check carefully to be sure you've marked the location of every piece of track, and then unfasten and remove the track. If you have some reasonably safe place to put the track while you lay down the cork roadbed, leave the sections of track assembled in fairly large chunks. It will save you time, and the less you assemble and disassemble the track, the tighter and more reliable the grip of the rail joiners.

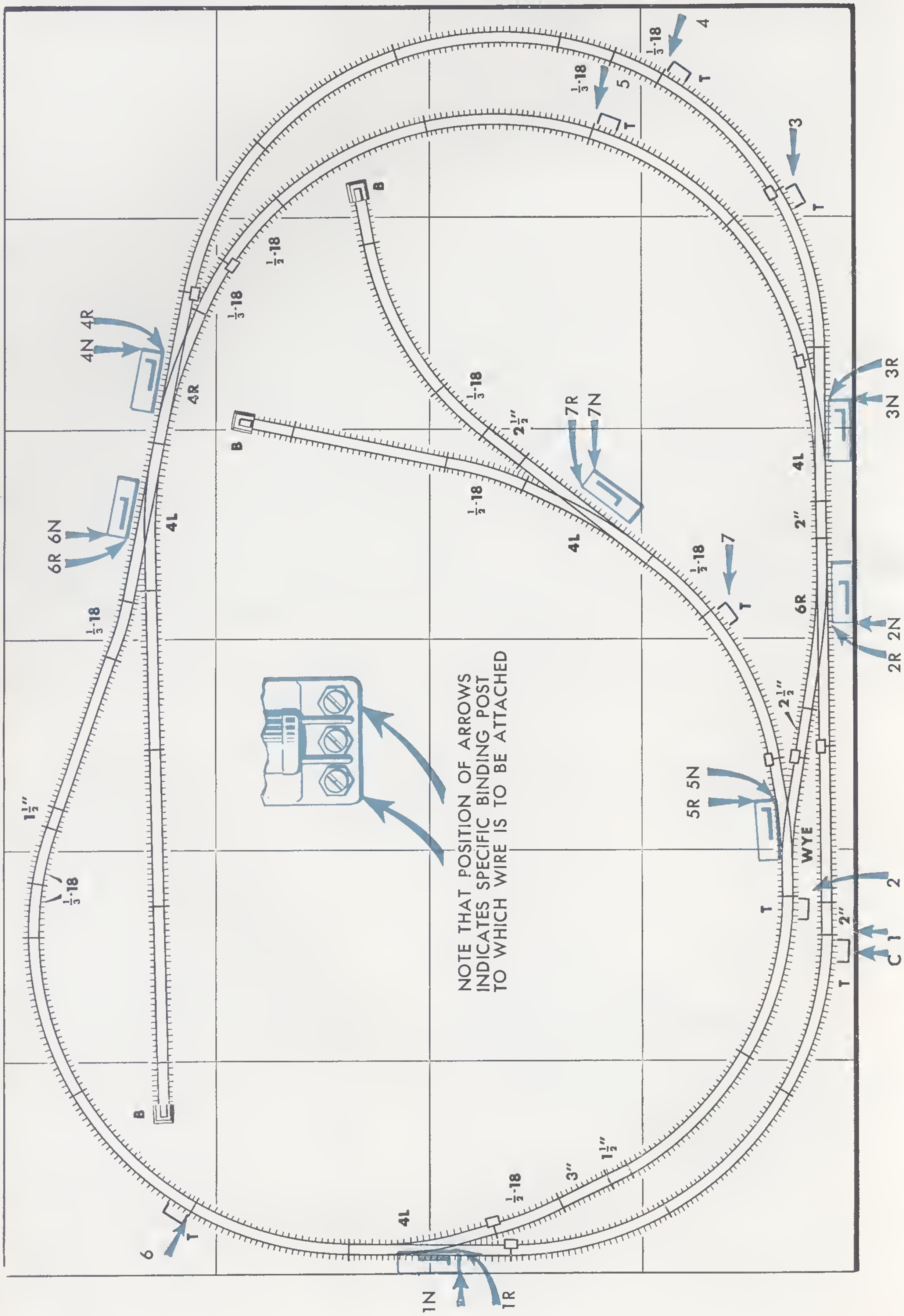
LAYING CORK ROADBED

Next, take a half-strip of the cork roadbed and lay its vertical edge along the row of pencil marks which indicate the track center line. Nail it down every two or three inches with the ⅝" nails as shown on page 9. Locate the nails (again by eye) approximately along the center line of the cork strip's flat upper surface. This will place them under the rail where they will be practically invisible. Don't hammer the nails down hard — just bring the head snugly up against the cork surface so as not to make a dimple.

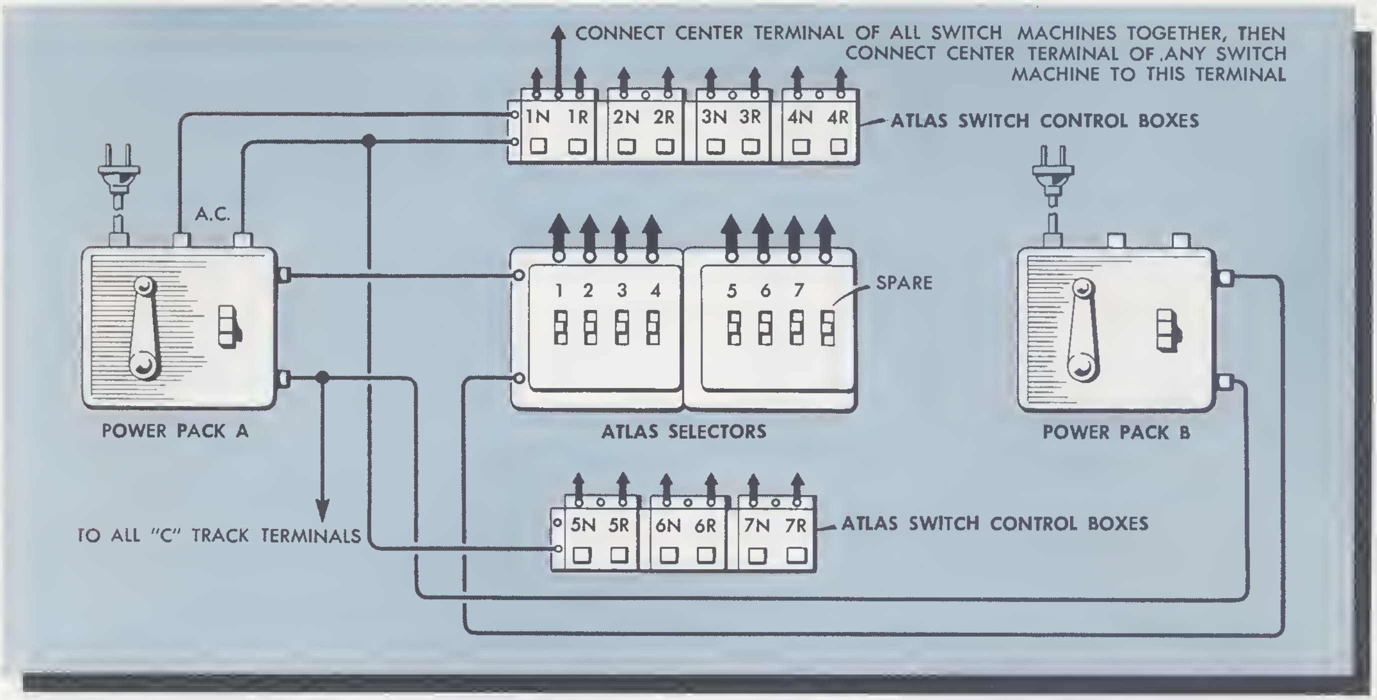


At the end of a strip, lay the next strip up on top of its neighbor as shown, overlapping the ends an inch or so, and nail it down starting a couple of inches from the joint. Then cut through both strips at once with a modeler's

RAILROAD A — TRACK AND ELECTRICAL TERMINALS — SCALE: 1½" = 1'-0"

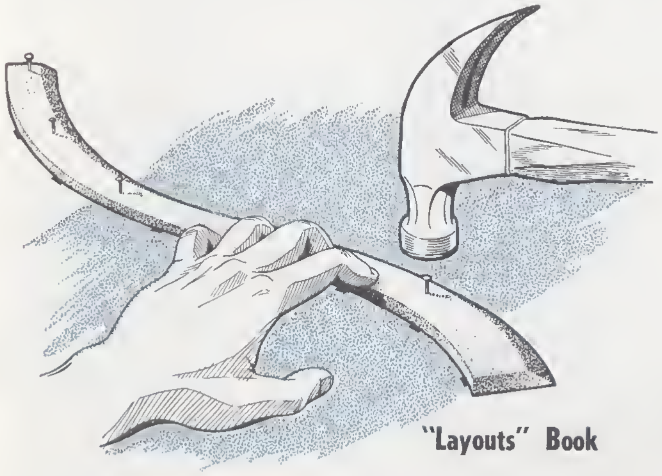


NOTE THAT POSITION OF ARROWS INDICATES SPECIFIC BINDING POST TO WHICH WIRE IS TO BE ATTACHED


CONNECT CENTER TERMINAL OF ALL SWITCH MACHINES TOGETHER, THEN CONNECT CENTER TERMINAL OF ANY SWITCH MACHINE TO THIS TERMINAL
1N 1R
2N 2R
3N 3R
4N 4R
ATLAS SWITCH CONTROL BOXES
A.C.
1 2 3 4
5 6 7
SPARE
POWER PACK A
ATLAS SELECTORS
POWER PACK B
TO ALL "C" TRACK TERMINALS
5N 5R
6N 6R
7N 7R
ATLAS SWITCH CONTROL BOXES

knife, discard the short cuttings and press the second strip down to the plywood against the end of the first. Nail the loose end down and you'll have a joint so close-fitting that it is practically invisible.

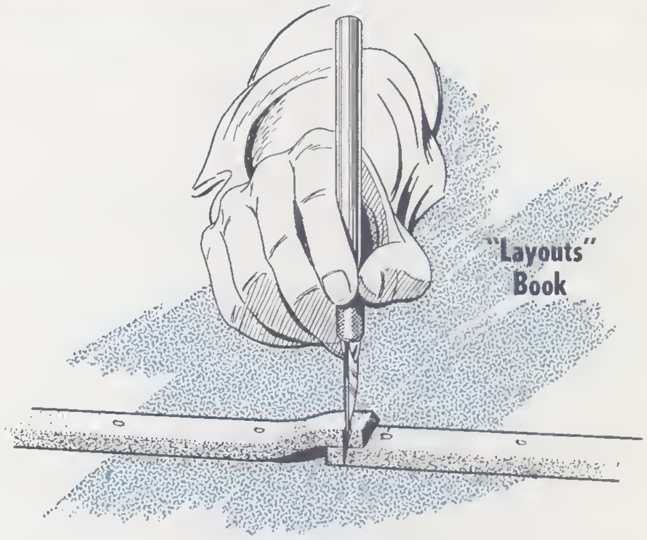
When you have one strip laid along the center line, simply hold the second half-strip alongside and nail it in place. Locate the nails in this second strip opposite those in the first strip, rather than staggering them, to avoid any tendency to make the roadbed waver from side to side. The slight burr along the corner of the roadbed where one half-strip was joined to its neighbor should be smoothed off with coarse sandpaper.



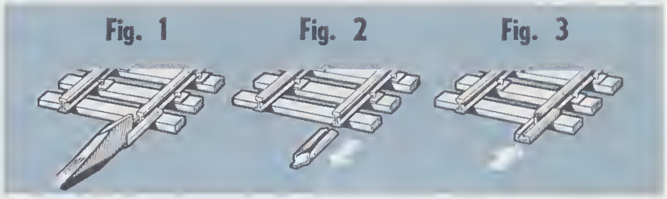
At turnouts, you can use the Atlas cork switch blocks or you can easily make your own junctions between regular strips of the material, as shown in the illustration. As in the case of the end-to-end joints, cutting down through both mating parts of the cork will automatically insure a neatly fitted joint. If you use the switchblocks, first fasten them in place at the various turnout locations and then fill in between them with the regular roadbed stock.

FASTENING DOWN THE TRACK

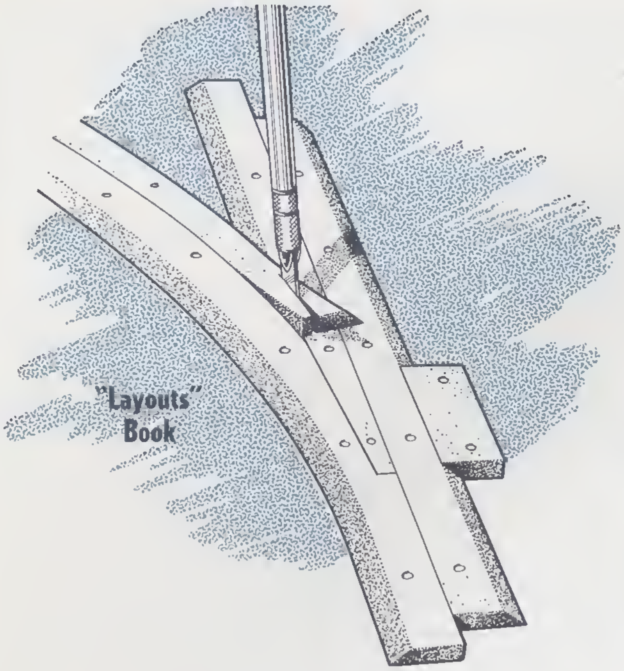
Now comes the step that makes the plywood base suddenly become a railroad. Lay your track back down on



the cork roadbed and reconnect the sections. This time the plastic rail joiners must be added at the nine locations shown by the little rectangles on one rail in the track diagram. Installing the insulating joiners, as shown below, is a simple operation, but be very careful to get them not



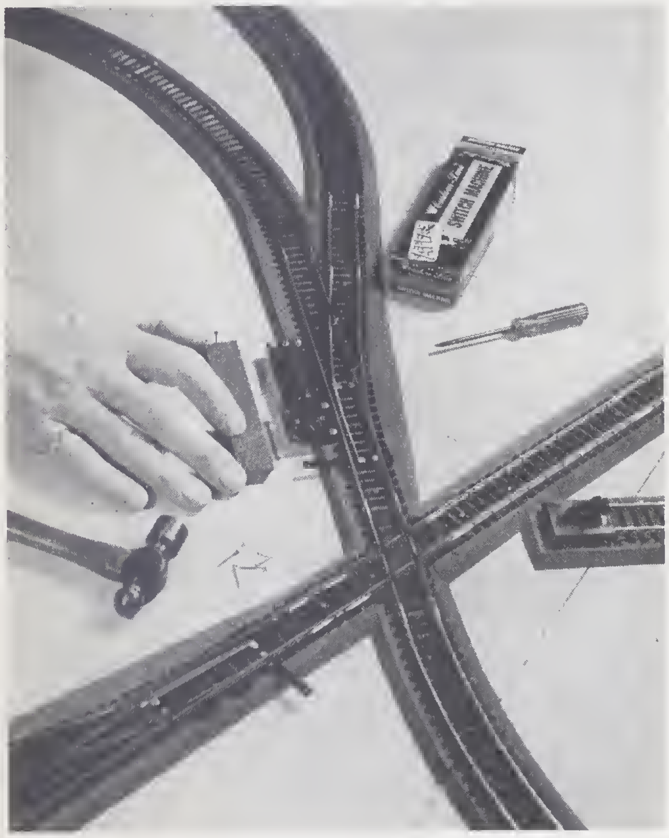
To electrically isolate one section of track from another so that you can have individual control of trains and operate around reversing loop tracks, Atlas plastic rail joiners are substituted for the regular brass joiners at the points indicated on the track diagrams. To remove the locked-on metal joiner from a piece of snap-track, spread the sides of the joiners with a blunt screwdriver blade (Fig. 1) and pull it straight off the rail, using pliers if necessary (Fig. 2). Slip the Atlas plastic rail joiner on half way, being careful not to damage the little plastic prong that separates the ends of the rails, and you're all set.



only between the proper sections of track but also on the particular rail indicated.

Also, now is the time to fasten the switch machines to the turnouts while you can still conveniently insert the hex nuts on the underside of the plastic ties. You may not wish to use remote-control machines on all turnouts, since those at the front of the layout are fairly easy to reach. In any event, you will want manual machines on all nonpowered turnouts. Should you later want to convert them to power operation, substituting a remote control machine will not require disturbing the track.

With the track completely assembled and lying atop the cork roadbed, again check its alignment to see that the turnouts are directly over the corresponding junctions in the roadbed and that there are no kinks in the curves where the sections snap together. Using one nail in every two sections or so, start fastening the track down with the ⅝" nails driven through the holes in the center of the ties. The principle thing to keep in mind is that the nails must not be driven down hard (which may buckle the tiestrip and make rough track) but should have the head brought down just snug against the tie.



TO PROTECT AND DRESS UP SWITCH MACHINE LOCATIONS, NAIL A 5" SECTION OF CORK ROADBED, UPSIDE DOWN, AGAINST THE REGULAR ROADBED UNDER THE MACHINE. TO IMPROVE APPEARANCE FURTHER, BEVEL THE OUTER EDGES OF THIS BLOCK WITH A SHARP MODELER'S KNIFE. IN THE CASE OF TRACK TERMINALS, USE A PIECE 2" LONG.

SINCE THE SWITCH MACHINE ON TURNOUT NO. 1 PROJECTS PAST THE EDGE OF THE LAYOUT, PROTECT IT WITH A BLOCK OF ¾" WOOD.

Keep rechecking the alignment at this point, using a straightedge (such as a yardstick) along straight stretches of track to make sure there are no kinks. Wiggles in the straight track probably won't cause derailments but they can keep a layout from looking like a railroad. When you're satisfied, put in an additional nail or so per section of track and the tracklaying is complete! In general, it is best to leave the turnouts themselves "floating," secured only by the nails in the three adjacent sections of track. This insures that the switch points and throw-bars cannot bind. If the nearby sections of track are short, however, it may be necessary to nail down the turnout at one or two points; if this is done carefully, it will cause no harm.

WIRING AND CONTROL

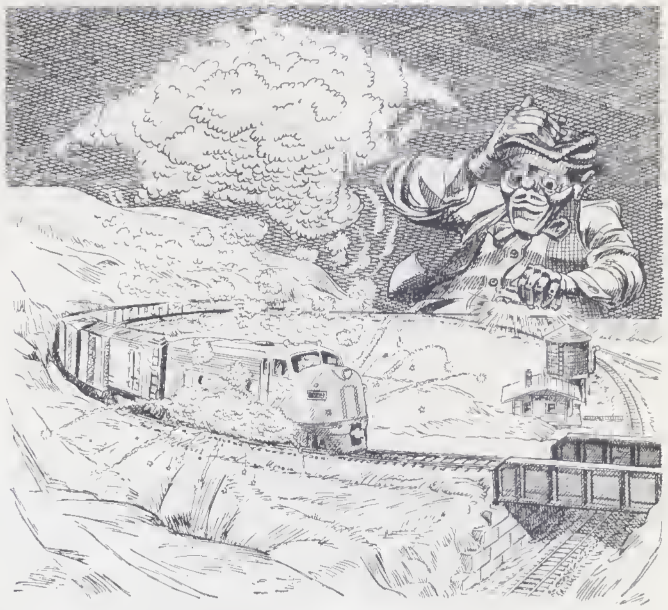
Modern Atlas components reduce the job of wiring up a single-track line like this to an absolute minimum, even though we are using cab control in which either of two power sources may be used to operate a train anywhere on the railroad. The diagram on page 9 shows the recommended layout for a control panel providing for remote control of all seven turnouts. A suitable material for the panel is ⅜" plywood, painted black. Lay the actual Atlas components and your two power packs out on a flat surface and you can readily determine just what size of panel is needed. You may well choose, of course, not to have the power packs themselves on the panel, in which case the panel will be correspondingly smaller. You should also give some thought to the manner of mounting the panel; a good way is to hinge it to one side of the layout so that it can be folded out of the way for moving or storage without disconnecting any wires.

After you've mounted the Atlas electrical accessories on the panel and drilled holes through the panel near each binding post, you're ready to start the actual wiring. This consists of connecting correspondingly numbered terminals on the track diagram (page 8) to those on the control panel. This is a short and simple task. but *don't* do it all at once! Oftentimes in two-rail placing a car innocently on the track at one point can lead to most surprising events at some distant point on the layout — sometimes due to poor circuit design and sometimes because one or more wires don't go where they're supposed to. The modern, simple common-rail, separate-power-supply system used in this book minimizes the possibility of the former, but if you wire the whole railroad up at once there is a good chance you'll get at least one wire misplaced somewhere, and this error may be so hard to locate that you'll end up by practically dewiring the whole system before pinning down the fault.

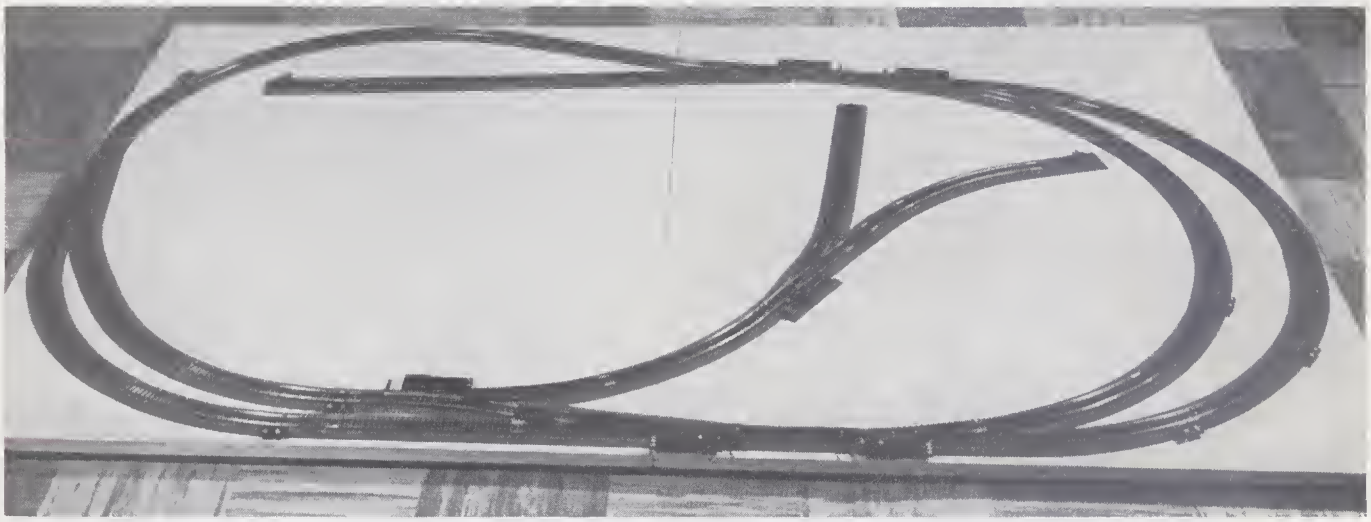
So, treat yourself to some fun and railroad as you wire! Hook up the power packs and one set of leads from the selectors to the track. Then run a train with each pack in turn, checking that it gets power when it's in the block that's supposed to be getting power and stops when it leaves the powered track. Similarly, hook up the switch machines one at a time and test them out.

Incidentally, in this book we use a normal-reverse designation for the switch control box push buttons, one of several possible ways of helping you keep track of which route is lined up. The "normal" position of a turnout is the one in which it is to be left when not in use — lined up to send a train along the main track, for example, in the case of a turnout at the end of a passing track. This position is always obtained by pressing the left-hand button on the control box. The "reverse" position results from pushing the right-hand button and corresponds to an "open" switch, set to send a train into the less-used track of the two leading from the turnout. In case there is no clear reason why one direction or the other is the "normal" one, the straight side of the turnout is arbitrarily designated as "normal" and the curved side as "reverse," as has been done with turnout No. 7 in this track plan. This scheme is the one most commonly used in full-size railroading; a glance at the little arrows on the Atlas control boxes will quickly tell you if everything is normal or which routes are lined up for reverse moves.

Since this is a relatively simple track plan, no track diagram has been shown on the control panel. If you want one, see page 19 for ideas. By now you should be running trains like crazy on your little railroad — next: scenery!



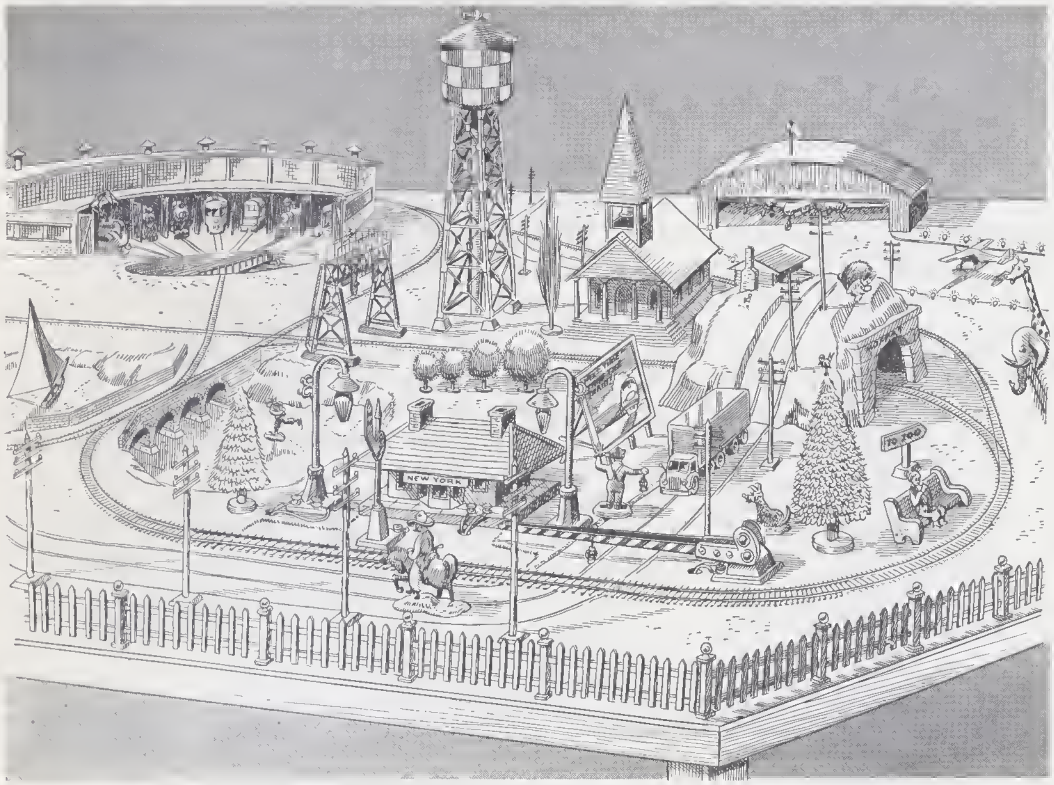
SOMETHING INNOCENT ON ONE SIDE OF THE LAYOUT MAY LEAD TO SURPRISING ELECTRICAL RESULTS ON THE OTHER!



AT THIS POINT THE RAILROAD SHOULD LOOK LIKE THIS, WITH ALL TRACK IN PLACE. TO WIRE THE TERMINALS AND SWITCH MACHINES, DRILL HOLES NEAR THEIR BINDING POSTS THROUGH THE PLYWOOD AND RUN THE WIRES UNDERNEATH THE LAYOUT TO THE CONTROL PANEL, SECURING THEM TO THE UNDERSIDE OF THE PLYWOOD WITH STAPLES.

FLAT-BED SCENICKING

A great many model railroads, including some on which a great deal of skill and time have been lavished, are restricted by the necessity for portability to flat-bed scenicking — dressing-up the plywood surface with removable trees, buildings and structures plus roadways, shrubbery, grass, etc. which can be fastened in place and will stay with the pike when it is upended for moving or storage. Our Simplicity and Great Plains is of this type. With reasonable care, a very pleasing and authentic appearance can be achieved using only flat-bed techniques, and the wide variety of scenicking materials and accessories available in the hobby shops these days make it possible to do a good job in a short time. However, in this phase of modeling, more perhaps than any other, it's your ingenuity and thoughtfulness that will play the biggest part in determining whether you get a scene whose realism is in keeping with the detail and quality of your track and trains instead of something rather hideous.



WITH A LITTLE CARE IN THE SELECTION AND LOCATION OF SCENIC ITEMS, YOU CAN DECORATE YOUR PIKE SO IT WOULD LOOK BETTER IF YOU HADN'T!!!

The trains will run just as well without scenery, so there is really no great hurry to complete the scenicking job — in fact, you'll want to keep on adding to and refining your railroad in this respect for a long time — so in this little book we concentrate on some fairly quick ways to achieve a reasonably finished appearance. If this is done properly, you can then proceed leisurely to "superdetail" the layout with more and better structures and other little features that will increase its realism and fascination. Meanwhile, you'll have a pike that is always ready for operation and display.

You're going to use your own ideas in selecting the type and arrangement of scenic items, so we give no detailed "put the mailbox next to the church" suggestions. Instead, here are ten general points to remember:

1. *Don't have too-violent transitions in time and space.* Plan your scenicking so that the lone prairie is not right next to Grand Central Terminal. In a small railroad, only a couple of principal types of territory at best can be reasonably included, and some space will have to be planned to make a logical transition from one to another — for a little edge-of-town scenery between downtown and the farmland, for example. Likewise, group your old-style buildings and your new development-type ramblers in the same way that they would be in an older town that has recently expanded.

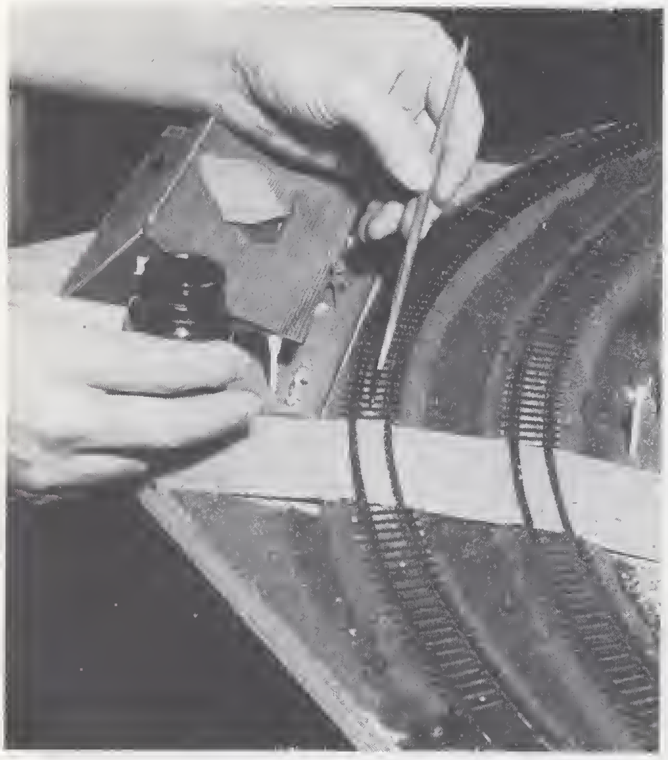
2. *Avoid the appearance of excessive crowding.* Actually, we want to crowd as much in the way of interesting scenic items into our limited space as possible, but the effectiveness of each individual item will be lost if it appears to have been artificially squeezed into the picture. Therefore, you'll do well to select scenes — downtown streets, for example — which actually *are* crowded in real life. Similarly, model truck farms instead of ranches, older multistory factories instead of new rambler-type plants, and obsolete roads instead of superhighway cloverleafs.

3. *Keep man-made lines regular.* Even old-time surveyors managed to get roads and buildings fairly straight, and modern suburban developments have regular curves to their streets and sidewalks. As a pleasing contrast to the irregularity of natural landscape features, lay out man-made fields, lot lines, and the like in regular fashion.

4. *Keep natural lines irregular.* Conversely, streams, woods, undergrowth, hills and other naturally-occurring features should be kept free of unrealistic regularity. The same thing goes for the effects of natural forces — cracks, holes, drippings and the like — on man-made items. Don't drill round holes in your old macadam highway and expect them to look like potholes from frost and traffic.

5. *Keep items in scale.* HO gauge is 3.5 millimeters to the foot scale; ⅛" to the foot is close enough for figuring the proper size for scenic items. You can sometimes use undersized structures if they're not too close to the track, but since the trains are in the foreground, you can never use items that are much over scale size without seriously reducing realism. There is a great deal of such oversize material on the market, so take a scale to it before you buy! In particular, don't use any people over ⅞" (approximately 6'4" scale) tall on your pike.

6. *Keep tones flat, not glossy.* With few exceptions (water, principally) all natural scenic items are flat in tone and never glossy. Even man-made structures, seen from the distances corresponding to normal viewing points for a model railroad, are rarely shiny — an enameled-metal filling station is probably the most common exception. Therefore, use only flat paints for scenicking and tone down plastic structures with paint or flat varnish before installing them. The safest type of paint to use for general scenery work consists of tinting color (sold in tubes or cans for tinting oil and water-base paints) thinned out with turpentine to a light wash. If an opaque color is needed (to make a board resemble concrete, for example), it can be rendered perfectly flat by loading it with talcum or dry plaster, the latter giving a somewhat coarser texture ideal for representing earth or stone.



ATTENTION TO SMALL DETAILS CAN DO MUCH FOR REALISM AT SMALL COST IN TIME AND MATERIALS. HERE THE NAIL HEADS HOLDING DOWN THE TRACK ARE TOUCHED UP WITH FLAT BLACK PAINT. THE GAP ALONGSIDE THE CARDBOARD ROAD WILL BE FILLED WITH PATCHING PLASTER OR PUTTY AND SAWDUST "EARTH."

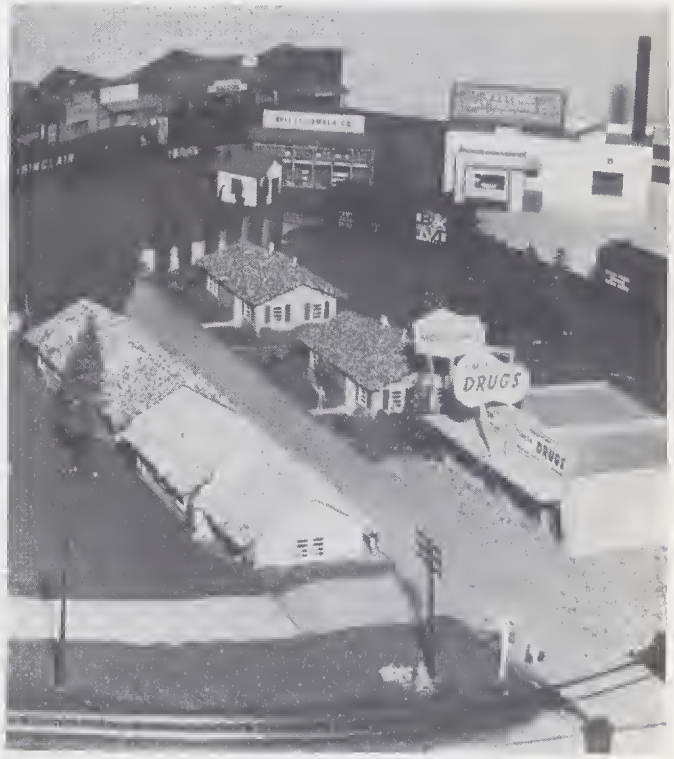
7. *Keep colors grayed.* Even Ireland is not actually a Kelly green, and your landscape should be correspondingly less vivid. Add gray, brown or a complementary color to reds, yellows and greens used for scenic painting until the over-all effect is lifelike rather than overpowering. Green-dyed sawdust sold for "grass" is far too green for our purposes; it will look much more reasonable if you mix it with a good proportion of brown "earth" material and then treat it with a thin brown turpentine wash.

8. *Cover all raw edges.* Kit and ready-made structures are usually built up on a baseboard about two scale feet thick. Imagine how such a wall would look in full scale! Likewise, the head of a ¾" nail is about 10" in scale diameter. All such raw edges and out-of-scale or inappropriate fastening items should be painted over, covered up or otherwise disguised. Carefully look over your scene for such give-aways and eliminate as many as you can; for the time spent, this is one of the most effective ways to improve your railroad.

9. *Don't expect people to crawl over the track.* Even a General Sherman tank feels quite a bump trying to cross a main-line railroad track where there's no crossing, so remember that wherever vehicles must get over the track (for access to a building or parking lot, for example) there must be a crossing of some sort. Lack of this is a common failing of even otherwise well-scenicked pikes.

10. *Don't have people in impossible positions.* A statue of Mercury in the city park can stand there for years on one toe, but a commuter chasing a train can't. Only figures sitting, standing or sleeping are really appropriate for a scene which is to be viewed and savored in leisurely fashion. Likewise, automobiles should be shown in parked or at least stopped positions, unless your pike is wired for sound so that you can reproduce the horn-blowing that would quickly result if cars should stay in a center-of-the-road position very long.

To get back to the scenicking of the Simplicity and Great Plains, this can be accomplished with kit and ready-made structures if you wish, with additional available items such as telephone poles, signs, fencing and the like. Roads and grade crossings are best made from heavy cardboard, nail holes being filled over and edges smoothed in with spackling compound or putty (now available in ready-mixed form in the small quantities needed here). Clear-drying glue (such as Elmer's Glue-All) thinned with water and painted over an earth-color base makes a suitable fixative into which to sprinkle dyed sawdust grass for permanent texturing of much of the surface of the layout. Commercial trees, removably inserted in holes drilled in the plywood, can be toned down with a very thin wash of turpentine and burnt umber; the same mixture will also de-gloss plastic evergreen trees.



THIS REMARKABLY REALISTIC SCENE SHOWS AN EARLY STAGE IN FLAT-BED SCENICKING. THE STRUCTURES, MOSTLY READY-BUILT, HAVE BEEN "PLANTED" WITH ENOUGH GRASS, SHRUBBERY AND CRUSHED ROCK TO HIDE THEIR FOUNDATIONS. JOINTS AND NAIL HEADS IN THE STREETS MUST BE PUTTIED SMOOTH AND PAINTED TO MATCH.

Great Eastern Trunk

THE Great Eastern Trunk attempts, in the very minimum of space, to give something of the flavor of heavy-duty, mainline railroading. The oval of the main line is double track, becoming triple track at one end by means of two interesting junctions. One of the prettiest sights in railroading is that of a long train snaking its way from one track to another by way of a crossover, and the Atlas No. 6 turnouts used in this plan are prototypically long and gentle in their curvature, reproducing realistically this graceful action. If you're most fascinated by the multitrack main lines typical of the railroads in the densely-populated East and around Chicago, this sort of track plan may be best for you.

The little yard on the Great Eastern Trunk is not intended to represent a major classification point where the long freights are reshuffled according to the many destinations of their cars — such an installation is far beyond the limitations of a four by eight-foot area. Rather, this scene is typical of a minor subdivision point at which cars set out by passing trains are made up into local freights which plod along the line distributing them to individual industries. Later in the day the cars picked up locally are made up into blocks for eastbound and westbound forwarding and spotted on the center mainline siding. The through freights then pick them up in the course of a brief stop for water and perhaps a change of crews, and they're on their way.

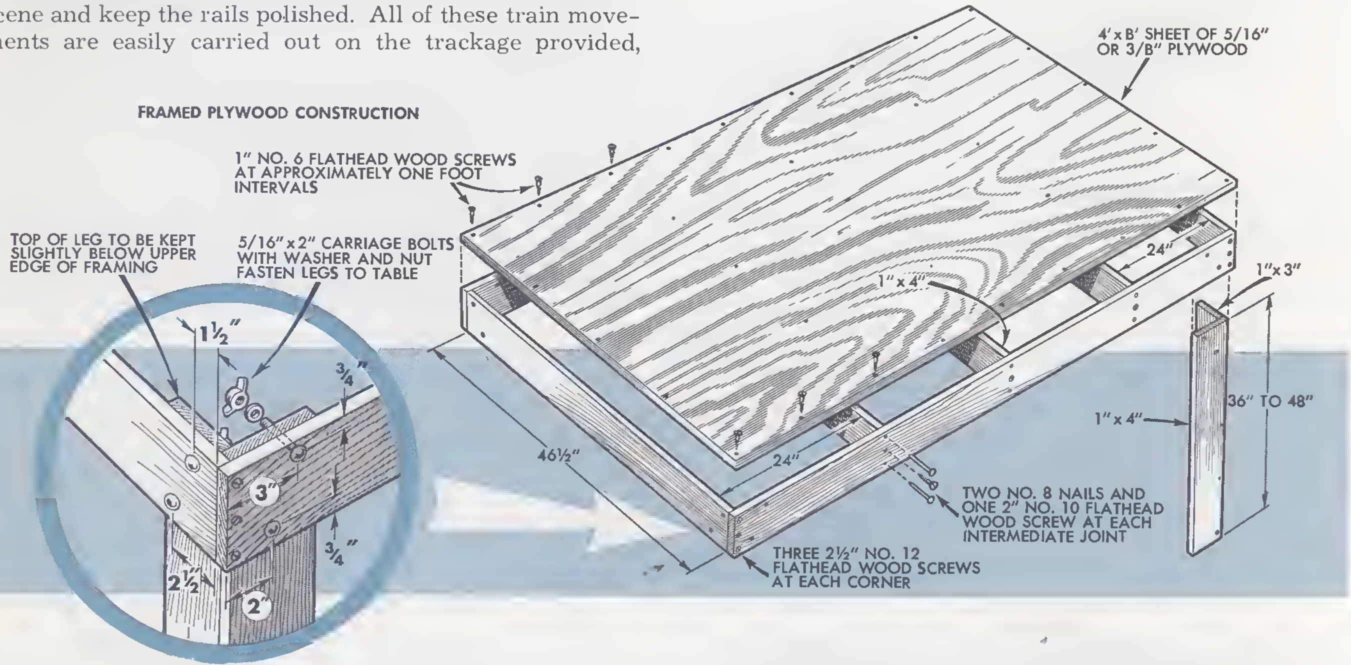
Meanwhile, of course, there is the passage of the various through and local passenger trains to liven up the scene and keep the rails polished. All of these train movements are easily carried out on the trackage provided, and since you yourself determine how many of your trains are main trackers and how many are locals, you can just run trains if you want to, without switching, or else get involved in trickier maneuvers when you're in the mood. There's a turntable and room for a small engine house to serve the switcher and the local freight locomotives; if your mainline motive power is too long for these facilities, it doesn't matter because these aristocrats of the high iron don't have to stop for servicing at such a minor base of operations.

BUILDING THE FOUNDATION

The standard plywood sheet is four by eight feet in size, so the Great Eastern Trunk can be built in the same manner as described in connection with Railroad A on page 7, using heavy (preferably ¾ inch) plywood without extra bracing. This size of sheet may not get into your train room, however, so make sure by a careful dimension check that it will pass through any stairways involved before you acquire the plywood. If there is trouble, you can then get your sheet cut in two when you buy it (or get two 4 x 4 footers) and fasten them together with cleats and screws on location.

As a general rule for a four by eight layout, however, the framed-top construction shown below is preferable, and this is the type of foundation for which material has been called out in the bill of materials on page 19. Such

FRAMED PLYWOOD CONSTRUCTION


4'x8' SHEET OF 5/16" OR 3/8" PLYWOOD
1" NO. 6 FLATHEAD WOOD SCREWS AT APPROXIMATELY ONE FOOT INTERVALS
TOP OF LEG TO BE KEPT SLIGHTLY BELOW UPPER EDGE OF FRAMING
5/16"x2" CARRIAGE BOLTS WITH WASHER AND NUT FASTEN LEGS TO TABLE
1½"
¾"
3"
¾"
2½"
2"
24"
1"x4"
1"x3"
36" TO 48"
1"x4"
46½"
24"
TWO NO. 8 NAILS AND ONE 2" NO. 10 FLATHEAD WOOD SCREW AT EACH INTERMEDIATE JOINT
THREE 2½" NO. 12 FLATHEAD WOOD SCREWS AT EACH CORNER

THE MOST ECONOMICAL FRAMED-TOP CONSTRUCTION USUALLY RESULTS FROM BUYING DRESSED PINE FRAMING MATERIAL OF INTERMEDIATE ("C OR BETTER") GRADE, RATHER THAN LOWER-GRADE MATERIAL OR EXPENSIVE CLEAR WOOD. ALLOWANCE FOR AN OCCASIONAL PIECE WHICH MAY HAVE KNOTS SO LOCATED AS TO MAKE IT UNSUITABLE FOR MAJOR FRAME MEMBERS HAS BEEN MADE IN THE BILL OF MATERIALS. SUCH REJECTED WOOD WILL FIND USE IN FINISHING AND SCENICKING THE RAILROAD. SELECT THE SOUNDEST PIECES FOR THE SIDE RAILS. IF ANY BOARDS ARE SLIGHTY BOWED, PLACE THE CONVEX EDGE UP, SO THEY WILL STRAIGHTEN UNDER LOAD. WING NUTS FOR ATTACHING LEGS TO FRAME ARE HANDY IF THE RAILROAD IS TO BE MOVED OCCASIONALLY. IT WILL USUALLY BE HANDIEST TO LAY ROADBED AND TRACK WITH PLATFORM ON THE FLOOR AND THEN PUT IT UP ON ITS FEET. CHOICE OF LEG LENGTH DEPENDS ON YOUR OWN HEIGHT AND HOW CLOSE-UP A VIEW YOU LIKE OF THE TRAINS. IN CASE OF DOUBT, BUILD THE RAILROAD HIGH TO START WITH AND THEN LOWER IT LATER WITH A SAW.

ONE OBJECT IN ANY COMPACT MODEL RAILROAD TRACK PLAN IS TO HAVE TRACKS SERVE MORE THAN ONE PURPOSE. IN THE GREAT EASTERN TRUNK THE THREE TRACKS AT THE LEFT END OF THE MAIN LINE LOOP GIVE THE IMPRESSION OF A HEAVILY-TRAFFICKED, BIG-TIME RAILROAD; CROSSOVERS AT EACH END OF THE TRIPLE SECTION ALLOW THE CENTER TRACK TO SERVE AS A PASSING TRACK FOR TRAINS ON EITHER OF THE TWO MAIN TRACKS THAT SURROUND IT. WHEN THE TWO OUTER TRACKS ARE BEING USED AS A DOUBLE-TRACK MAIN, THE INNER TRACK THEN BECOMES A LEAD TRACK FOR THE YARD; THE SWITCHER CAN USE IT TO SHUFFLE CARS WITHOUT FOULING THE MAIN.

AN INTERESTING PROBLEM ON THIS RAILROAD IS THAT OF GETTING THE CARS OF A TRAIN ON THE OUTSIDE LOOP INTO POSITION TO BE SWITCHED IN THE YARD, IN THE FACE OF A TRAIN TRAVELING CLOCKWISE AROUND THE INNER LOOP. WITH THE CONTROL CIRCUITS PROVIDED, IT CAN BE DONE (THOUGH NOT WITHOUT A SHORT WAIT FOR THE INNER-LOOP TRAIN) BUT ENOUGH FORETHOUGHT IS REQUIRED TO KEEP YOU ALERT.

construction makes the railroad about forty pounds lighter and usually somewhat cheaper as well. If you can't handle the whole thing in one piece, add an additional cross-member in the center so that you have two square frames and cut the side sills and the plywood sheet in half, reducing the monster to two manageable halves. A method of keeping the split parts lined up rigidly is shown in the picture on page 34. To assemble the frame, you can save a bit of money and time by using one wood screw in each intermediate joint between cross-member and side sill, along with two nails. The nails will do as well as screws as far as keeping the joint square is concerned, while the one screw will keep the assembly from becoming loose.

When your foundation is assembled, slap a coat of some neutral, earthy color all over the top surface so that it won't be necessary later to paint up close to the cork roadbed, and then you're ready for the track gang.

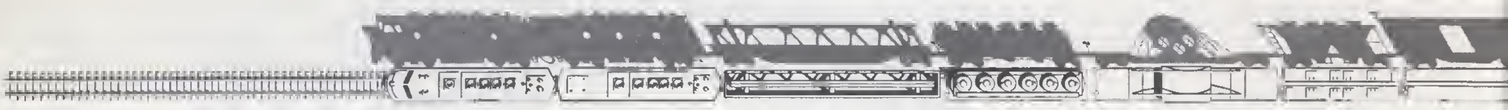
LAYING THE TRACK

Laying the track follows the same procedure as outlined for Railroad A on pages 7 through 10. One additional point is important in this multiple-track layout, though. When you have assembled the track for the first time and before you mark the center-line locations, carefully check the distance between parallel tracks at all points. It will work out to about 2¼ inches from center to center, both along the straightaways and around the curves, or, if you prefer to measure it that way, to a spacing of 1⅛ inch from the end of the ties on one track to the near end of the ties on the next track. Spend a few minutes at this point getting the straight and the curved tracks free from kinks and you will be rewarded for years afterward by a good-looking layout.

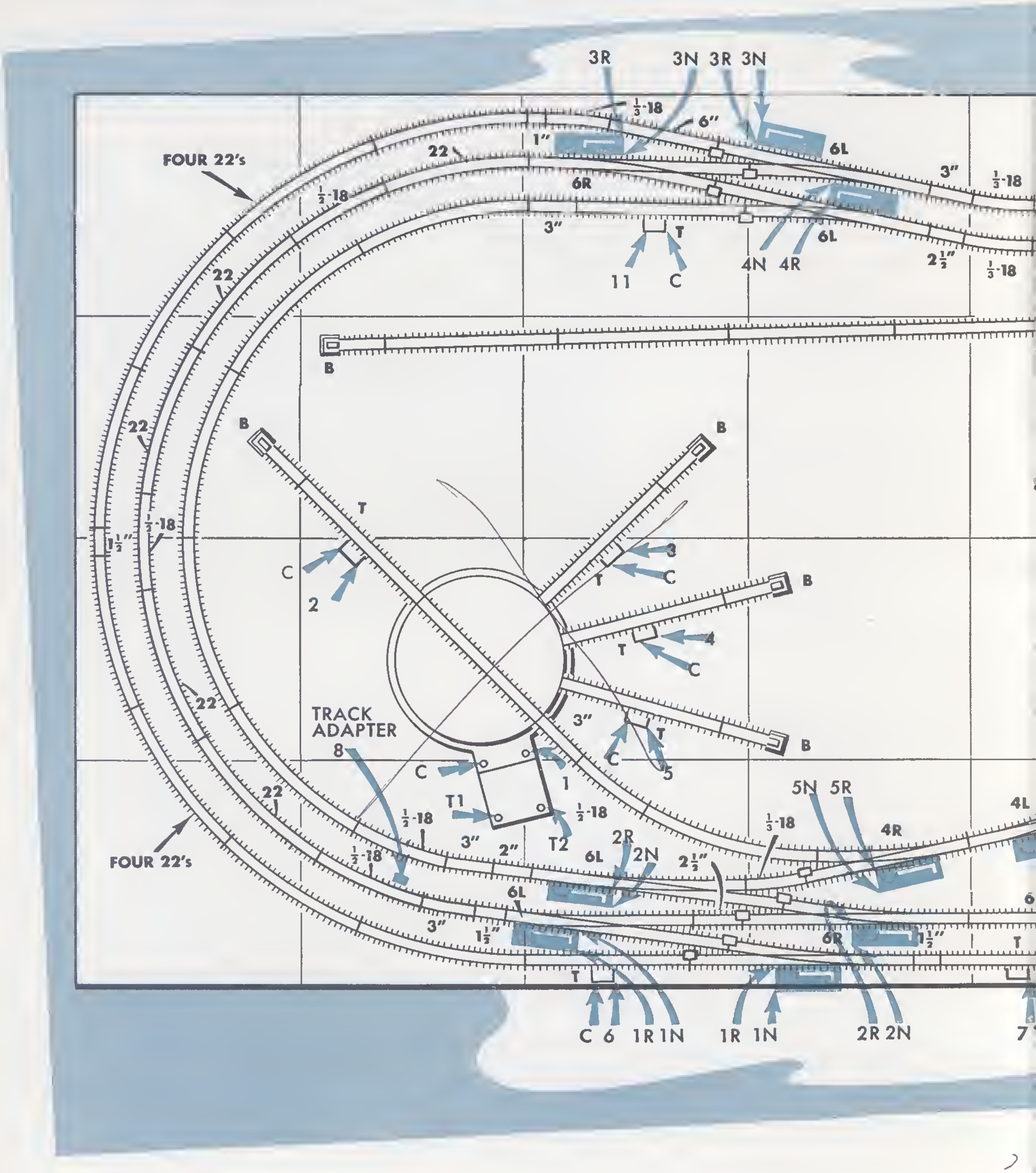
Tack the track down lightly, mark the center lines, remove the track in large sections, and lay the cork roadbed with or without switch blocks as you prefer. You're now ready to replace the track and start fastening it down. Before you drive the first nail, though, remember to attach an Atlas track adapter to the inside rail of the center track at the point indicated on the diagram and to drill a hole through the plywood for its shank to pass through. This will allow you to make a good electrical connection to this section of track, which happens to be made up exclusively of sections which are not available with terminal blocks already attached. Incidentally, for those of you to whom a soldering iron is not an unfamiliar and frightening tool, a word of caution: it is difficult to solder directly to the rail in Atlas Snap-Track without melting the plastic tie strip and perhaps throwing the rail out of line, so use of these inexpensive solderless connectors is recommended in such cases where a regular terminal section won't fit.

In fastening down the trackage on a closed-loop system such as this, assemble the entire trackage before fastening any of it down. Then start at the triple-track end, locating the track with a very few nails to start with, and work your way along both straightaways, checking track center distances occasionally. When the double-track end of the oval has been located, then check for kinks and the straightness of the sides of the oval and drive additional nails as needed to locate the track permanently. Although the center track consists of alternating pieces of 18" and 22" radius and so is not theoretically a smooth curve, with a little care in lining it up you'll be pleasantly surprised at the graceful, kink-free section of triple track that results.

Locating a track plan of this size on a four by eight foundation leaves much of the trackage too close to the edge for easy and effective scenic treatment. As a nicer

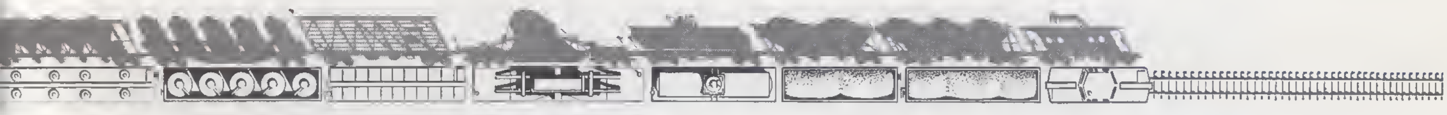


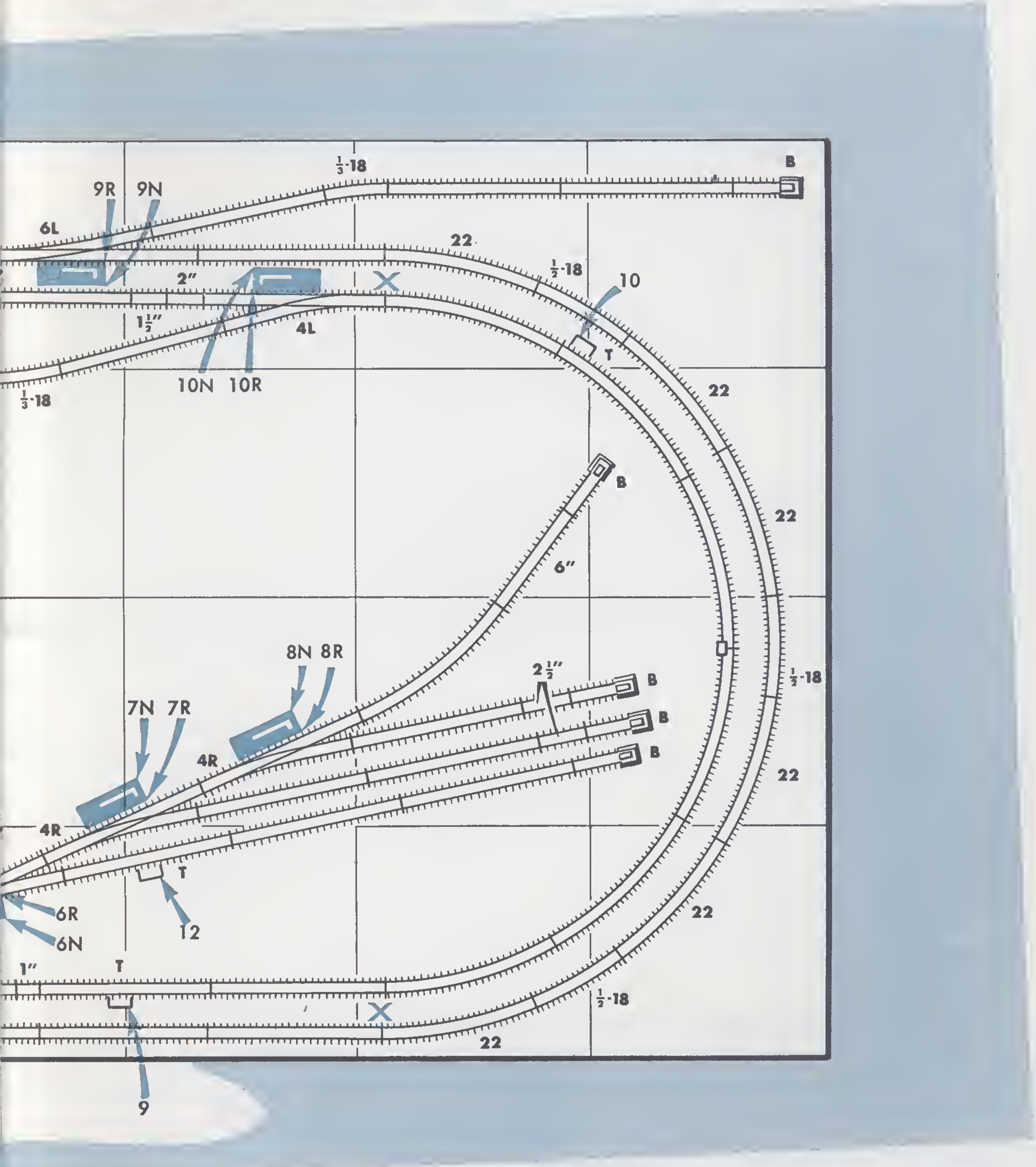
RAILROAD B — GREAT EASTERN TRUNK — SCALE: 1½" = 1'-0"



alternative if you have the space, consider locating the same plan on a five by nine foot rectangle as shown by the shaded area above. The double-track curve at the right end of the oval can then be moved 9" toward the end of the platform by inserting a standard section of straight track in each of the four main lines at the points marked "X," giving much more impressive straightaway length.

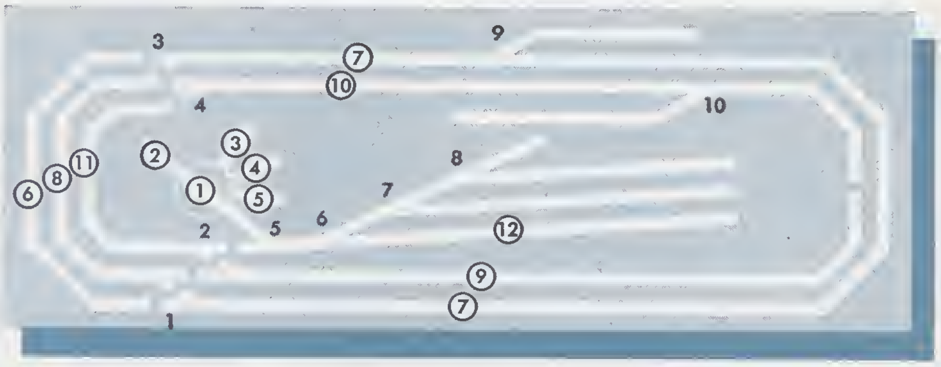
Not only does this modification keep the track safely away from the edge but locating the trackage slightly on the bias helps distract attention from the edge of the layout, thus making the effect more realistic all the way around your railroad.

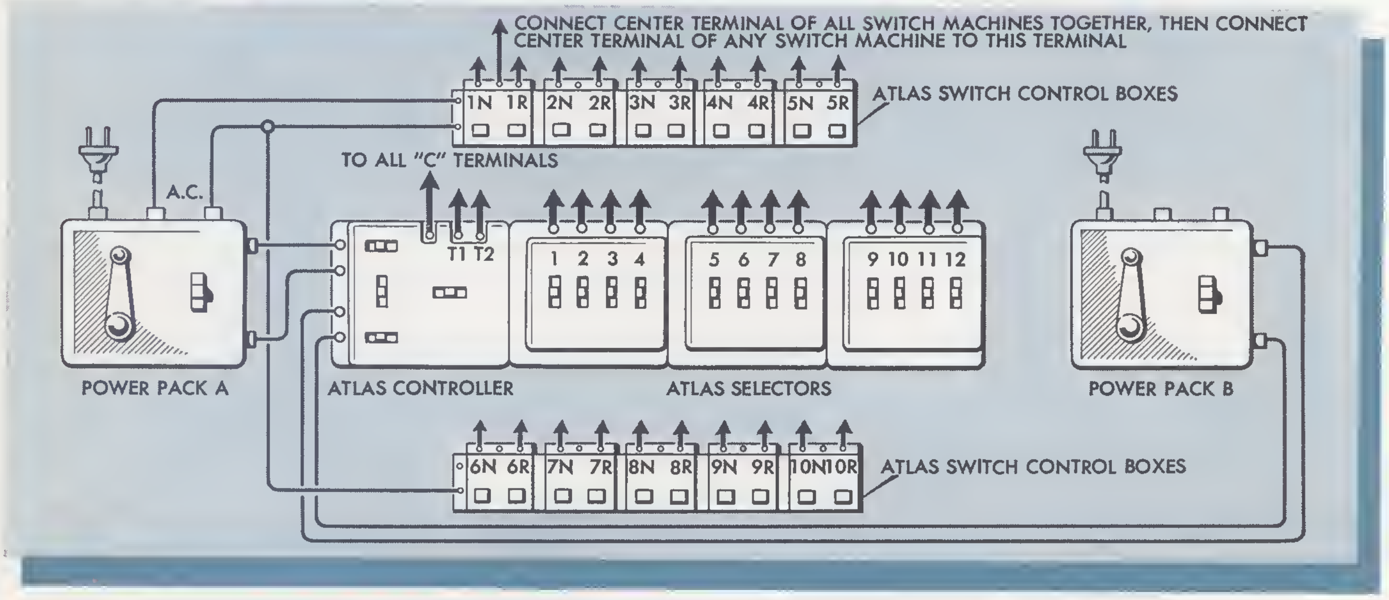




Five by nine foot plywood sheets (or 4½ by 5 foot half-sheets) are available at many building supply or lumber dealers, where they are stocked for use as ping-pong table tops. Alternate framing-material requirements for the larger size foundation are given in the bill of material on the next page; construction is much the same as that shown in the figure on page 14, so take your choice.

If you think you will need the additional storage space, it is also possible to increase the capacity of the yard by extending the three parallel tracks with another section of track each. However, for reasons discussed in connection with scenicking suggestions for this railroad, a




CONNECT CENTER TERMINAL OF ALL SWITCH MACHINES TOGETHER, THEN CONNECT CENTER TERMINAL OF ANY SWITCH MACHINE TO THIS TERMINAL
1N 1R
2N 2R
3N 3R
4N 4R
5N 5R
ATLAS SWITCH CONTROL BOXES
TO ALL "C" TERMINALS
A.C.
T1 T2
1 2 3 4
5 6 7 8
9 10 11 12
POWER PACK A
ATLAS CONTROLLER
ATLAS SELECTORS
POWER PACK B
6N 6R
7N 7R
8N 8R
9N 9R
10N 10R
ATLAS SWITCH CONTROL BOXES

better use of the extra length may be to allow for hiding that end of the main line oval in a tunnel.

WIRING THE GREAT EASTERN TRUNK

For a railroad with the operating possibilities of the Great Eastern Trunk, a control panel with a track diagram is well worth while — you'll often have two trains in motion and a third waiting to go, so the help the diagram gives you in remembering which switch is which will be almost essential to safe and smooth railroading. Accordingly, lay out the Atlas controller, selectors and switch control boxes (and your power packs, if you wish to locate them on the panel) as shown in the diagram. Measure the over-all size of the assembly, allow a space about 7" high above the top of the upper row of switch control boxes, and obtain a piece of plywood ¾" thick or so of the resulting dimensions.

The color scheme for your control panel is optional. A traditional and railroad-like combination that is easy to make up is silver track lines on a black background; white on dark green is also a favorite. In any case, sand the panel smooth and apply enough coats of the background color to obtain a smooth, hard surface. Then proceed to layout the track diagram with ¼" wide Scotch tape

LAY OUT THE TRACK DIAGRAM ON YOUR CONTROL PANEL WITH ¼" WIDE SCOTCH TAPE, CUTTING THE CORNER JOINTS WITH A MODELER'S KNIFE. A GLOSSY PANEL SURFACE IS BEST SINCE THE TAPE WILL PEEL AWAY CLEAN LEAVING NO MARK. AFTER THE PANEL IS COMPLETED A COAT OF EITHER FLAT OR GLOSSY VARNISH WILL PROTECT THE TAPE.

TO LAY OUT A CROSSOVER ON THE DIAGRAM, RUN THE TAPE ACROSS THE MAIN LINES AND TRIM TO A NEAT JOINT. GAPS REPRESENTING THE ENDS OF POWER BLOCKS ARE CUT LATER AND PEELED OFF. LABELS FOR POWER BLOCKS (CUT FROM A CALENDAR) ARE LOCATED ON THE TRACK LINES; THOSE FOR TURNOUTS ARE BESIDE THE LINE.

Atlas Track Products

9" straight section	18
6" straight section	3
3" straight section	5
Snap-Track kit	2
Straight terminal section	9
Bumper	10
Full section 18" radius	12
Half section 18" radius	8
Third section 18" radius	6
18" radius terminal section	1
Full section 22" radius	18
No. 4 right-hand turnout	3
No. 4 left-hand turnout	2
No. 6 right-hand turnout	3
No. 6 left-hand turnout	5
Atlas rail joiners	1 box
Plastic rail joiners	1 dozen
Atlas track adapters	1 package
Turntable	1
Turntable power unit	1

Roadbed Material

Atlas cork roadbed (3 ft. sections)	22*
Atlas cork switch blocks, No. 4	5
Atlas cork switch blocks, No. 6	8
⅝" or ¾" No. 19 or No. 18 flat-head wire nails	¼ lb.

*Note: if roadbed at turnouts is built up as shown on p. 10, omit switch blocks and obtain 28 sections of roadbed instead of 22.

Electrical Control Items

Single-train power supply with 16 volt a.c., 12 v. d.c. outputs, speed control, reversing switch and circuit breaker	2
Atlas controller	1
Atlas selector	3
Atlas remote control switch machine	13
Atlas switch control box	10
Train power wire (No. 20 or No. 18, No. 18 preferred)	50 ft.
Switch machine hookup wire (No. 22 or heavier)	100 ft.

Foundation Material and Miscellaneous

5/16" or ⅜" plywood, 4 x 8 ft.	1 piece
1" x 4" dressed white pine, "C" or better, 8 ft. lengths*	7 pieces
1" x 3" dressed white pine, "C" or better, 8 ft. lengths*	2 pieces
No. 8 common nails	1 lb.
No. 12 flat-head wood screws 2½" long	1 dozen
No. 10 flat-head wood screws 2" long	1 dozen
No. 6 flat-head wood screws 1" long	3 dozen
5/16" carriage bolts 2" long, with washers and wing nuts	16
Gray or brown flat paint	½ pint

*Nominal size 1" material, actual thickness and width about ¼" less.

For 5 x 9 foot railroad, separable into two sections, substitute the following:

⅜" plywood, 4½ x 5 ft.	2 pieces
1" x 4" dressed white pine, 10 ft. lengths	6 pieces
1" x 4 dressed white pine, 8 ft. lengths	3 pieces
1" x 3" dressed white pine, 8 ft. lengths	3 pieces
No. 12 flat-head wood screws 2½" long	2 dozen
No. 10 flat-head wood screws 2" long	2 dozen
No. 6 flat-head wood screws 1" long	4 dozen
5/16" carriage bolts 2" long, with washers and wing nuts	2 dozen
3" steel loose-pin butt hinges	1 pair

Two 4½ by 5 foot sections are connected by hinges and supported by six legs, four attached to one section, two to other.

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of the appropriate color, forming corners and turnouts as shown in the illustrations.

The exact scale you use for the diagram is of little importance, but it is highly desirable that you follow the exact arrangement shown at the turnouts; that is, make the straight side of the turnout on the track diagram the same as in the diagram. Whether or not this is the straight side of the actual turnout in the track, it is the "normal" direction for the traffic through the turnout and will be lined up in each case by pushing the left-hand button on the Atlas switch control box. As you operate the railroad you will soon learn the normal position for each switch, but it's always helpful to have the diagram act as a reminder.

Numbers to designate the track power switches and turnout control box numbers on the diagram may be put on most neatly with decalcomania sets available in various sizes and colors at the larger stationery stores, but it is also quite likely that you will find suitable numbers on old calendars already on hand. We haven't indicated place names for the various junctions and stations on these railroads, since you'll undoubtedly have your own ideas on this score. Decal alphabets put out by model railroad manufacturers are especially neat for designating place names on the diagram; radio supply houses also carry decal alphabets intended for lettering electronic instruments and control panels which are just right in lettering style and size for our purposes. In any case, protect panel markings with a coat of varnish.

Wiring the completed panel to the railroad is the same as for Railroad A — simply connect correspondingly-numbered terminals on panel and track diagram. Notice that in the case of the crossovers connecting the mainline tracks together one switch control box throws two turnouts. You never need to throw one turnout individually, so this hookup saves control boxes without in any way reducing flexibility of operations on the railroad.

An Atlas controller is used to feed the turntable motor. This means that you can use either power pack to operate the turntable and can reverse its direction without affecting the trains. The Atlas turntable's internal wiring arrangement is such that you can't get your electrical polarities wrong as you run locomotives in and out of the roundhouse tracks — a big simplification in comparison to the usual wiring problems in connection with such a reversing section in two-rail. We have left some room for judgment, of course — you can still drive the engine into the roundhouse wall if you don't check the direction of your reversing switch before giving it the gun!

GREAT EASTERN TRUNK SCENERY

The flat-bed scenicking applied to Railroad A on pages 12 and 13 can also be used on the Great Eastern Trunk with good effect. Since there's a little yard and roundhouse, considerably more railroad-related structures and items — water tanks, yard offices and the like — can be accommodated. The chief function of scenery on this railroad, though, should be to break up the merry-go-round effect of fast trains circling the mainline loop. In the four by eight-foot version, the most satisfactory thing that can be done is to locate a number of fairly high buildings — offices, grain elevators, warehouses and the like — around the right-hand end of the mainline oval so that trains will be at least partially hidden during this part of their orbits. Gaps between buildings can be filled in with fences, shrubbery and trees to help complete the deception.

If there is room for the five by nine foot version, the railroad can be improved greatly by building a mountain (or even an elevated portion of a city, since this railroad with its heavy traffic is particularly appropriate in an urban setting) under which the right-hand end of the oval is completely concealed. The mountain-building methods detailed for Railroad E on pages 35 to 39 apply for this job as well. The tunnel portals should be located far enough to the left to be on the straightaway portion of the mainline loops. They will thus give the impression that the track keeps on going straight rather than curving around in a loop as it actually does. The yard tracks will then have to be fitted into a little alcove in the mountain somewhat similar to the quarry in Railroad E.

RAILROAD C

Southside Connecting

LACK of even enough space for a single oval of track need not keep you from having a permanent railroad of good appearance and continuing operating interest. Just build yourself a shelf-type switching line such as the Southside Connecting.

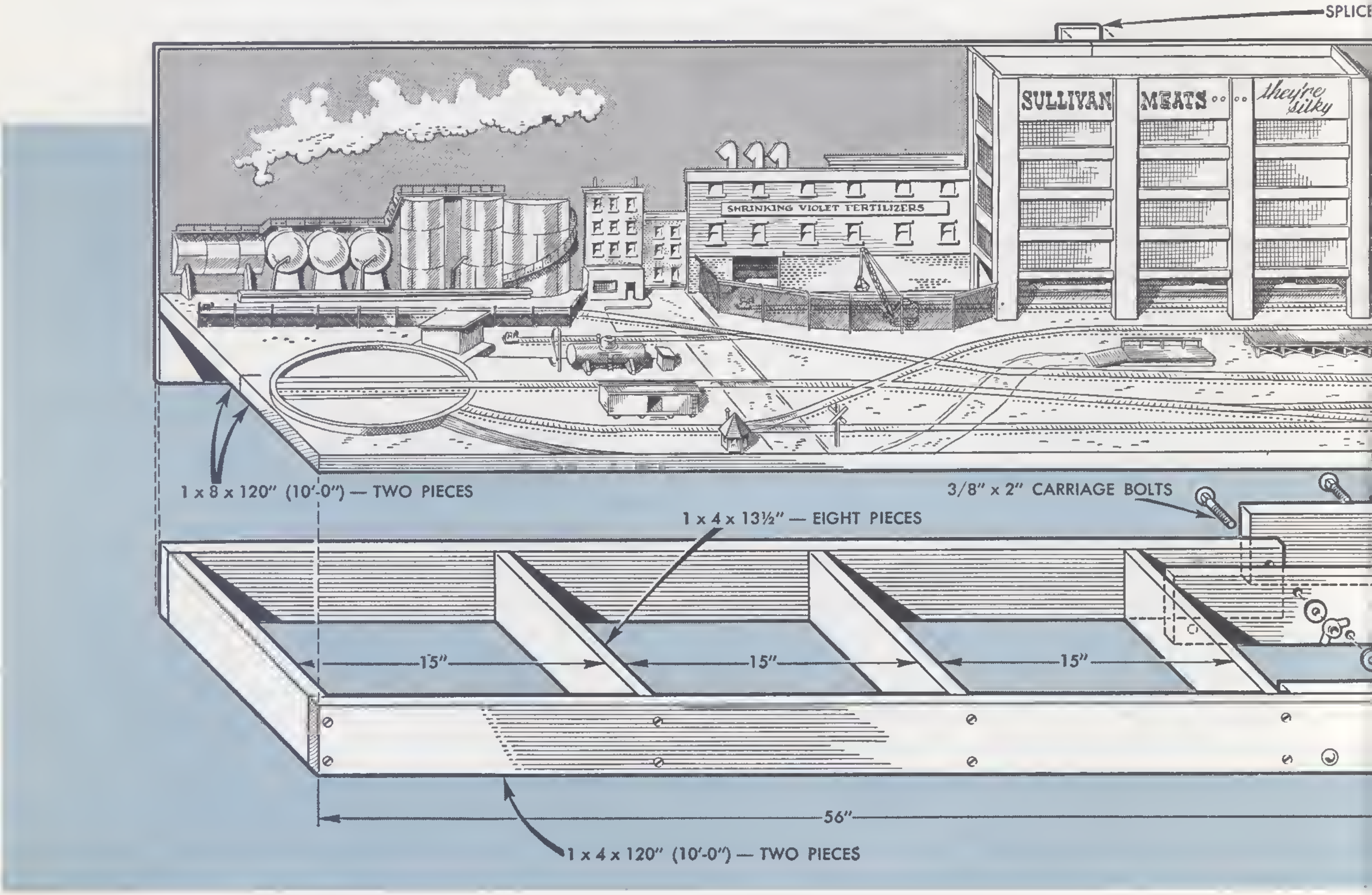
The vital mission of the Southside Connecting is carried out in a small space and never involves high speeds, but can keep two engines busy around the clock. Cars, presumably received from connections to the yard at the right, are spotted at the widely diversified industries crowded in to the switching district served by the little common carrier. Outbound empties and loads originating at these same plants are then taken back to the yard for transfer to the mainline railroad connections. Actually, one of those tracks at the right-hand end of the scene should have no bumper, to show that it's the route to the rest of the nation. Since you might get over enthusiastic and push some over the end, we've put a solid stop on each track, which you may omit at your own risk.

Most of the operating fascination of the layout comes from the fact that very devious routes are required to reach some of the sidings — notice how many movements are required to get a tank car from the yard to the bulk oil plant at the left rear of the scene. In the process it will be necessary for the switch engine to "run around" the car so as to be able to spot it in the spur track which faces the other way; this means using the turntable to complete the movement.

The need for a turntable on this little road (which should have only switch engines on its roster) arises from the fact that some loaded cars received can be unloaded only from one side, and by the principle of maximum inconvenience they will always show up from the connecting line facing in the wrong direction. With this justification for having a turntable in the first place, we then arrange to keep it busy by making it a part of the only run-around track in the area.

BUILDING THE FOUNDATION

The Southside Connecting is built as a highly rigid shelf, stiff enough to support itself if set up on a couple of wall brackets or, for intermittent operation, on the backs of two chairs. The framework of 1 x 4's goes together as shown; the only precaution in construction is to see that crosspiece "A" is so located that it comes directly under the ends of the 1 x 8's which form the surface of the platform. This will happen automatically if you follow the dimensions carefully, but a double check before you saw


SPLICE
SULLIVAN MEATS
they're silky
SHRINKING VIOLET FERTILIZERS
1 x 8 x 120" (10'-0") — TWO PIECES
3/8" x 2" CARRIAGE BOLTS
1 x 4 x 13½" — EIGHT PIECES
15"
15"
15"
56"
1 x 4 x 120" (10'-0") — TWO PIECES

Atlas Track Products

9" straight section	22
6" straight section	8
3" straight section	3
Snap-Track kit	2
Straight terminal section	4
Rerailer	1
Bumper	10
Half section 18" radius	2
Third section 18" radius	2
Full section 15" radius	1
18" radius terminal section	1
No. 4 right-hand turnout	1
No. 4 left-hand turnout	2
No. 6 right-hand turnout	3
No. 6 left-hand turnout	3
Wye turnout	1
30° crossing	2
45° crossing	1
Atlas rail joiners	1 box
Plastic rail joiners	1 dozen
Turntable	1
Turntable power unit	1

Electrical Control Items

Single-train power supply with 16 volt a.c., 12 v. d.c. outputs, speed control, reversing switch and circuit breaker	2
Atlas controller	1
Atlas selector	2
Atlas remote control switch machine	10
Atlas switch control box	10
Train power wire (No. 18 or No. 20, No. 18 preferred)	25 ft.
Switch machine hookup wire (No. 22 or heavier)	100 ft.

Foundation Material and Miscellaneous

1 x 10 white pine shelving, "C" or better, 10 ft. lengths†	2 pieces
1 x 4 white pine shelving, "C" or better, 10 ft. lengths†	4 pieces
4 ft. x 4 ft. ⅛" hardboard (Masonite)*	1 piece
Cedar shingle (at least 9" wide)	1
No. 10 flat-head wood screws 2" long	6 dozen
No. 6 round-head wood screws 1" long*	2 dozen
4-40 round-head machine screws ½" long, with nuts*	2 dozen
⅜" carriage bolts 2" long, with washers and wing nuts	8
⅝" or ¾" No. 19 or No. 18 flat-head wire nails	¼ lb.
Gray or black flat paint	½ pint

†Nominal size 1" material, actual thickness and width about ¼" less.

*For backdrop — omit if not desired.

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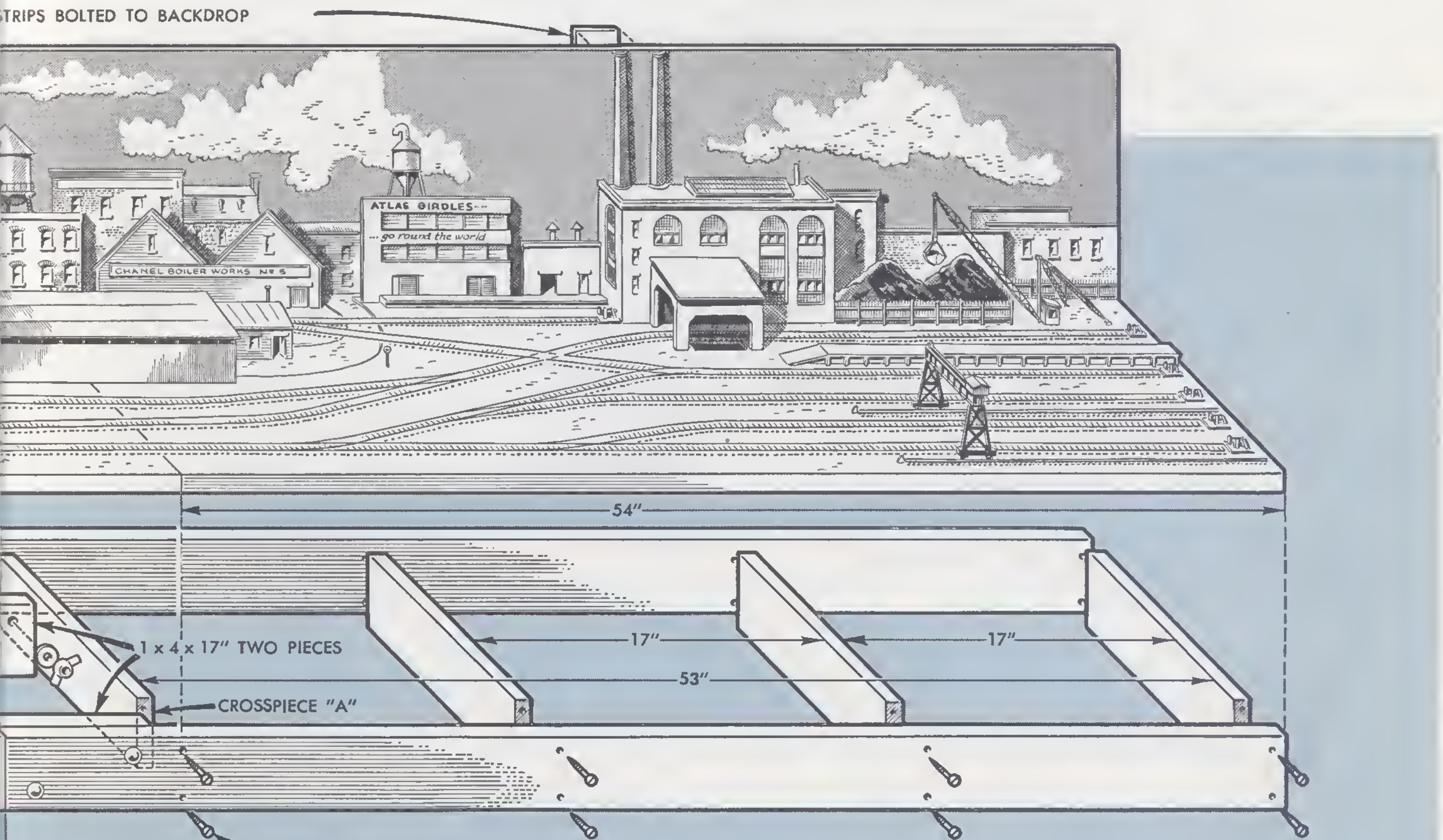
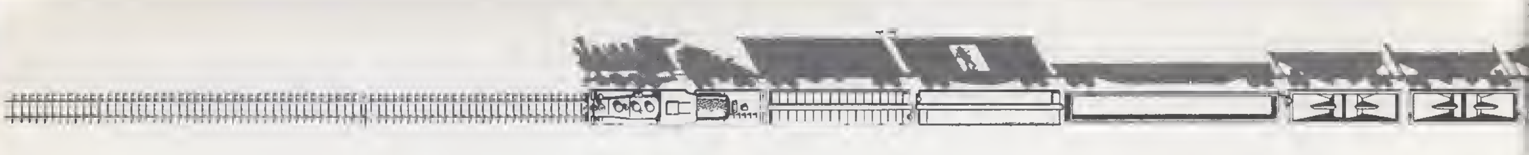
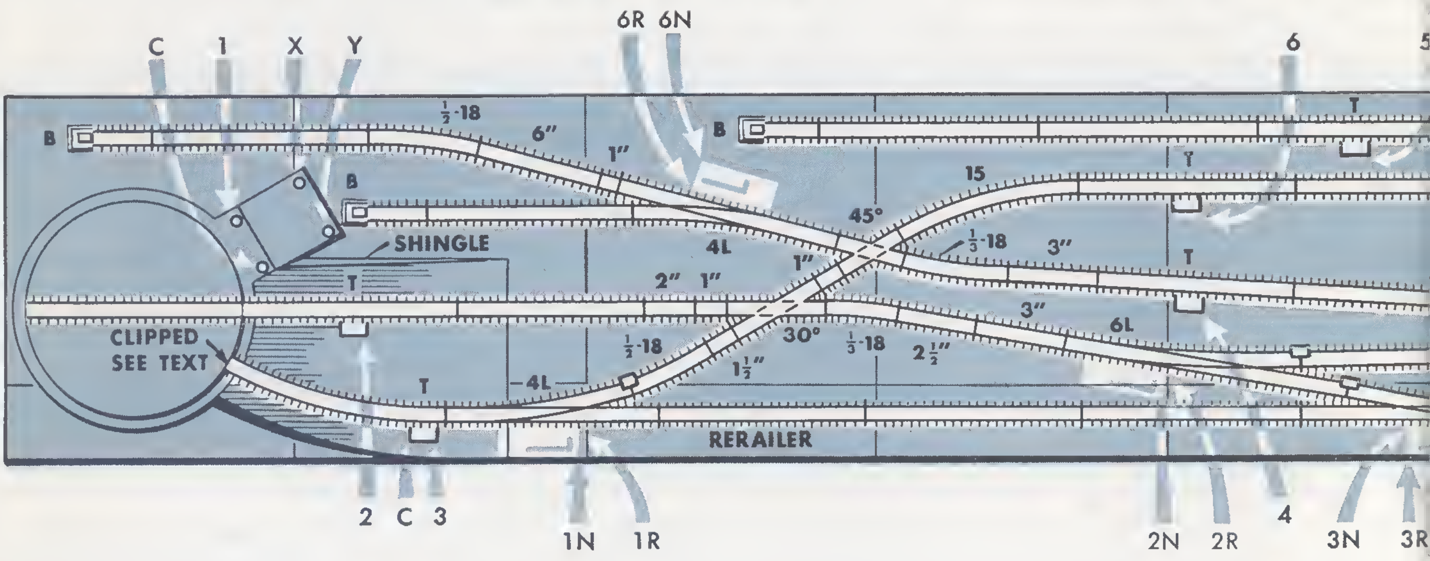
and hammer is always wise. Drill the holes for the splice bar bolts before you saw the side sills in two and things are then bound to line up afterwards. If you are *sure* that a chunk of railroad 10 feet long will never be a handling or shipping problem, you can build her in one piece and save the bolts.

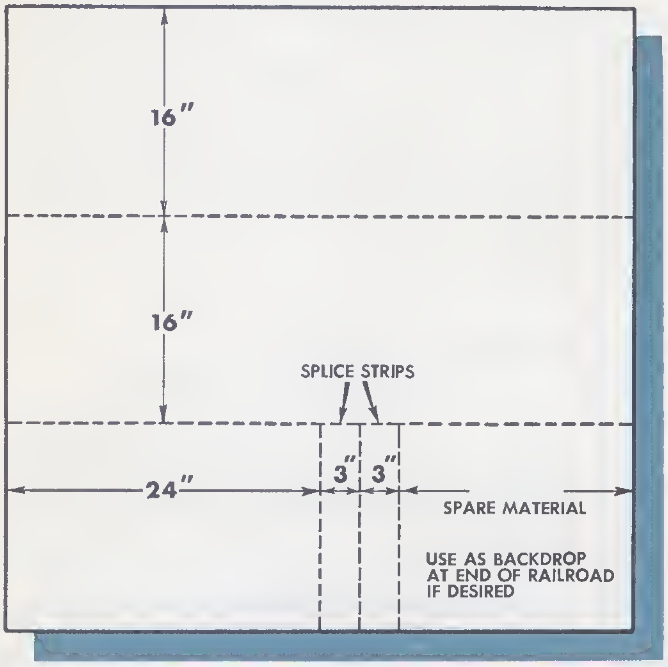
The principal reason for the relatively closely-spaced crosspieces and the use of 1 x 4 framing is to insure that the 1 x 8 top pieces are kept flat and true. Use at least two screws in each board at each crosspiece location (and a third one in the center if the board shows any tendency to bulge) and you should have a sound foundation on which to build with confidence.

Since most switching railroads have very informal ballast, if any, on their trackage and many, many grade crossings, we have laid the Atlas Track directly on the platform in this case. Therefore, put the insulating plastic rail joiners on as you fit the trackage together the first time. Check the alignment in critical places (chiefly to see that parallel tracks are parallel and no closer together









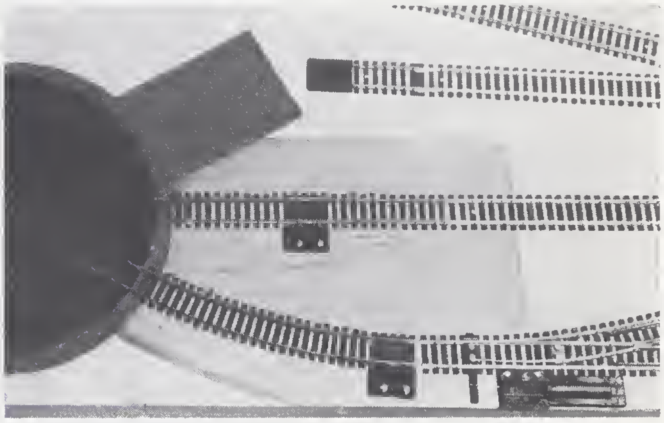
A FOUR BY FOUR FOOT SQUARE OF ⅛" HARDBOARD (MASONITE) PROVIDES MATERIAL FOR MAKING A BACKDROP WHICH CAN BE SCREWED RIGIDLY TO THE BACK SILL OF THE LAYOUT. IT WILL PROJECT ABOUT A FOOT ABOVE THE TRACK LEVEL, GREATLY INCREASING THE ILLUSION OF THE WHOLE LAYOUT AS A BUSY INDUSTRIAL SCENE. SAW IT UP AS SHOWN AND SPLICE THE SECTIONS END-TO-END WITH 4-40 BOLTS THROUGH THE HARDBOARD STRIPS. NOTICE THAT HIGH BUILDINGS AND CHIMNEYS HIDE THE JOINTS.

than 2" center-to-center at any point) and you're ready to fasten it down directly to the pine. Use the same little flat-head nails as are used in laying on the cork roadbed in other layouts; they will go into the pine easily, but if you should have the misfortune to run into a knot right at some vital spot, just drill a hole for that particular nail and continue on with the job. At the turntable, the track is shimmed up with a shingle as shown.

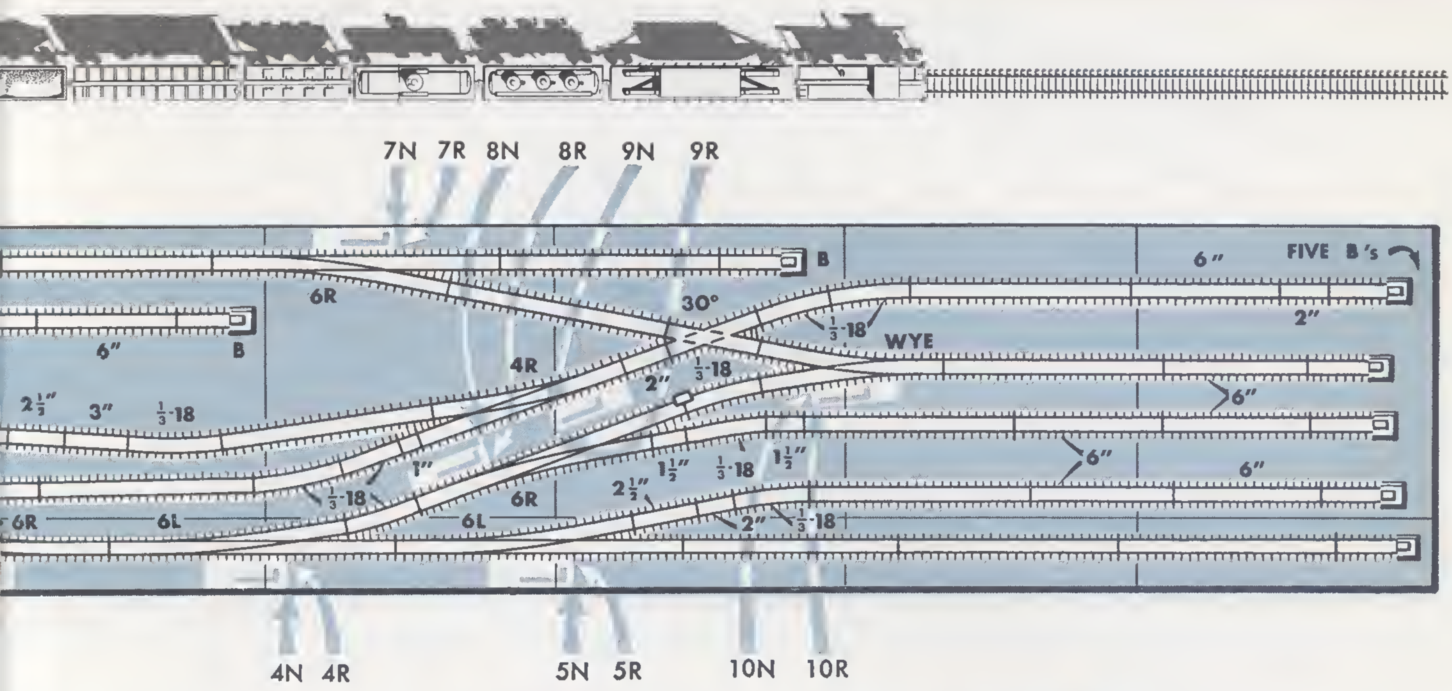
WIRING AND SCENERY

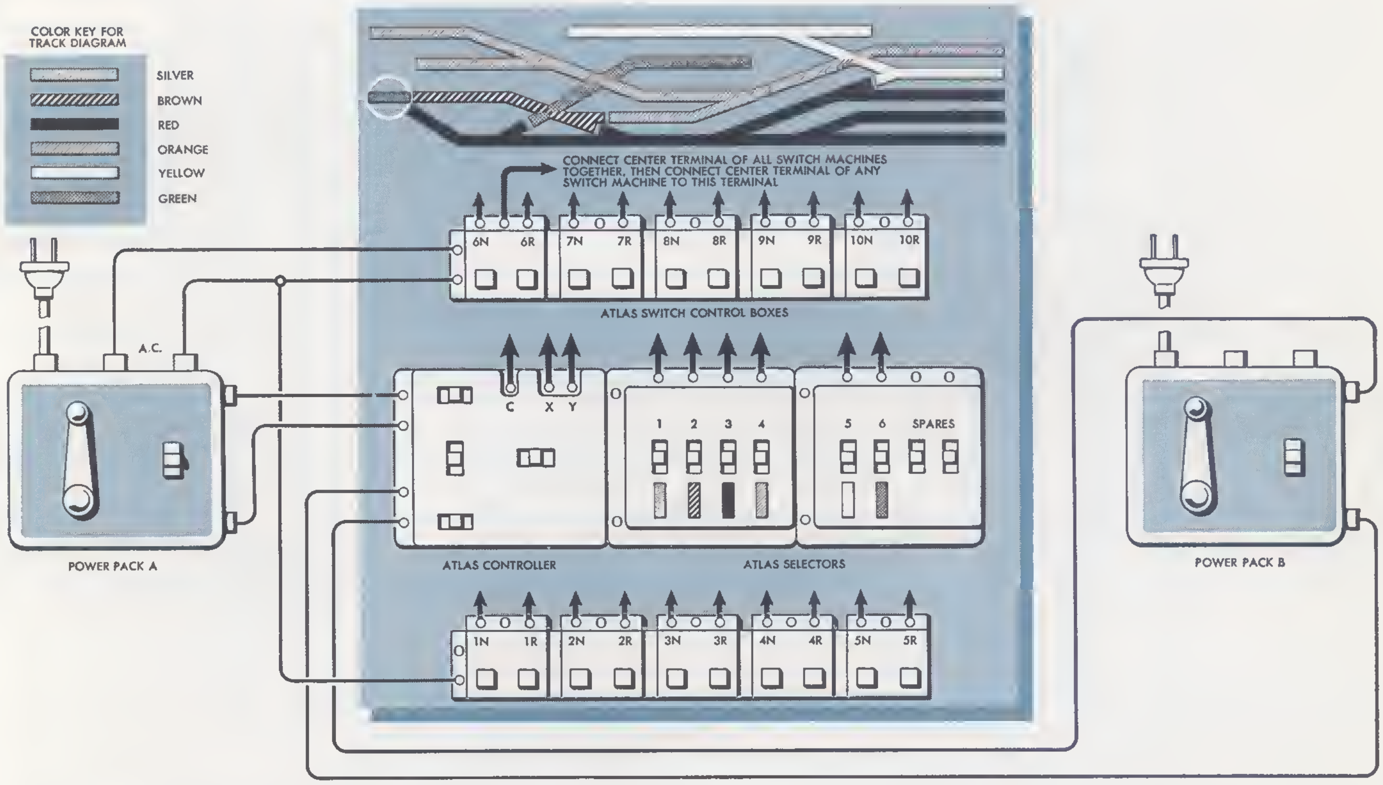
With everything in easy reach, the Southside Connecting can be operated quite well with manual switch machines, in which case of course no switch control boxes are needed. It's a good idea to leave room for them on the control panel, though, as you may weaken later and want to convert some or all to remote control. Use of two Atlas selectors leaves a pair of spare switches for use in providing more operating flexibility when two switchers are working. After you've been running the railroad for a while you'll find by experience some places where the extra separate circuits will be most useful, and then a piece of wire, a terminal section, and a plastic rail joiner per section will do the job.

Without a backdrop, this railroad is pretty narrow. With one, it can be quite impressive. Don't let a lack of confidence in your artistic ability slow you down! All that is required for creating the effect of the bustling



A GENTLE TAPER IS NEEDED TO BRING THE TRACK UP TO THE LEVEL OF THE TURNTABLE APPROACH; THE EASIEST ANSWER IS A COMMON CEDAR SHINGLE, WHICH YOU SHOULD BE ABLE TO PROMOTE FROM YOUR LUMBER DEALER — AS A SAMPLE OR AS A GIFT TO A GOOD CUSTOMER. WE LEFT THIS ONE UNPAINTED TO SHOW HOW IT'S USED, BUT NATURALLY IT SHOULD BE PAINTED BEFORE THE TRACK IS LAID. LOCATE THE TURNTABLE TO LINE UP WITH THE STRAIGHT APPROACH TRACK, CUT THE SHINGLE TO CORRESPOND, AND THEN ADJUST THE CURVED TRACK TO MEET THE TABLE BY CLIPPING OFF THE END OF THE TERMINAL SECTION TO SUIT. SINCE NO RAIL JOINERS ARE USED HERE, THIS IS SIMPLY A MATTER OF SAWING OFF THE RAILS AND SMOOTHING THE ENDS WITH A FILE.



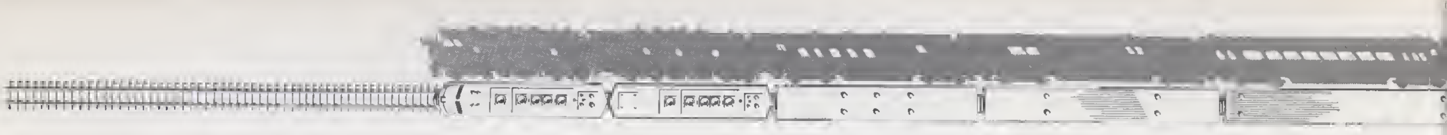


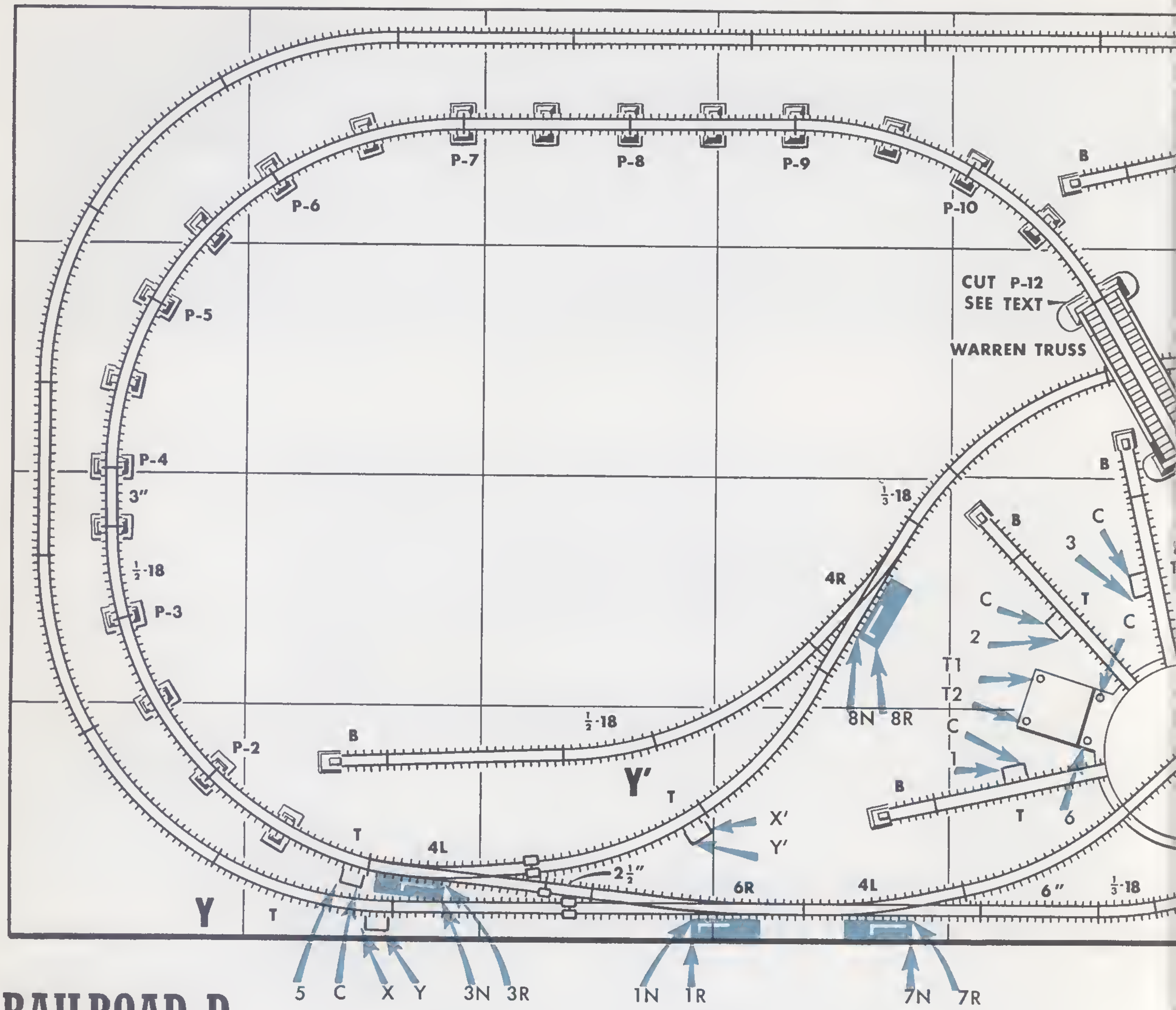
CONNECT CENTER TERMINAL OF ALL SWITCH MACHINES TOGETHER, THEN CONNECT CENTER TERMINAL OF ANY SWITCH MACHINE TO THIS TERMINAL

IN ALL LAYOUTS IN THIS BOOK, A "TWIN" POWER PACK CAN BE SUBSTITUTED FOR THE TWO PACKS SHOWN, ONLY IF ITS UNITS HAVE COMPLETELY SEPARATE FEEDS AND CONTROLS. HOWEVER, SEPARATE UNITS CAN BE PLACED AT OPPOSITE ENDS OF THE CONTROL PANEL MAKING IT CONVENIENT FOR TWO ENGINEERS TO RUN TRAINS WITHOUT GETTING IN EACH OTHER'S WAY. TO KEEP THE TRACKS STRAIGHT ON SUCH A MIXED-UP LITTLE RAILROAD, USE A COLOR-CODED CONTROL PANEL TO REMIND YOU WHICH SWITCH POWERS WHICH TRACK. BUILD IT WITH COLORED SCOTCH TAPE AND USE PIECES OF TAPE ON THE SELECTORS FOR IDENTITY.

industrial scene is a coat of light sky blue color on the hardboard backdrop (which will take flat oil or rubber-base paints very readily) and the erection of "flats" of some buildings and industrial structures immediately in front. This is a process that is more model building than artistry, so have no fear. As a further help, some of the cardboard cut-out structures sold in book form for HO gauge scenicking are usable in creating flats — just glue them onto the backdrop as is.

Some of the structures, of course, you'll want to build in three dimensions. We've looked down on the railroad from a bit higher than the intended viewing angle in drawing up the illustration on page 20, so you can see which items (the power plant, meat packing establishment and oil plant) can well be built up in partial relief. Now don't go saying that you don't have room for a railroad! The Southside Connecting is guaranteed to give your switchmen's union many hours of overtime pay.

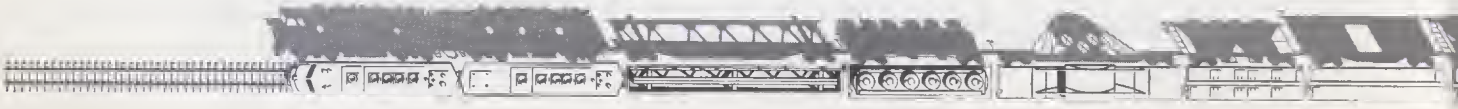


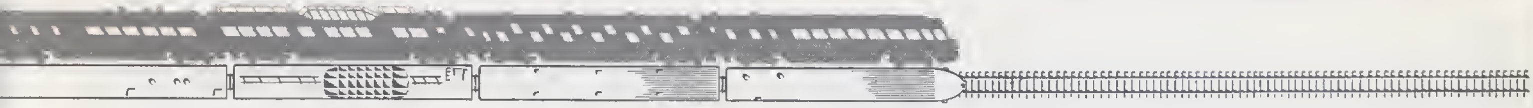


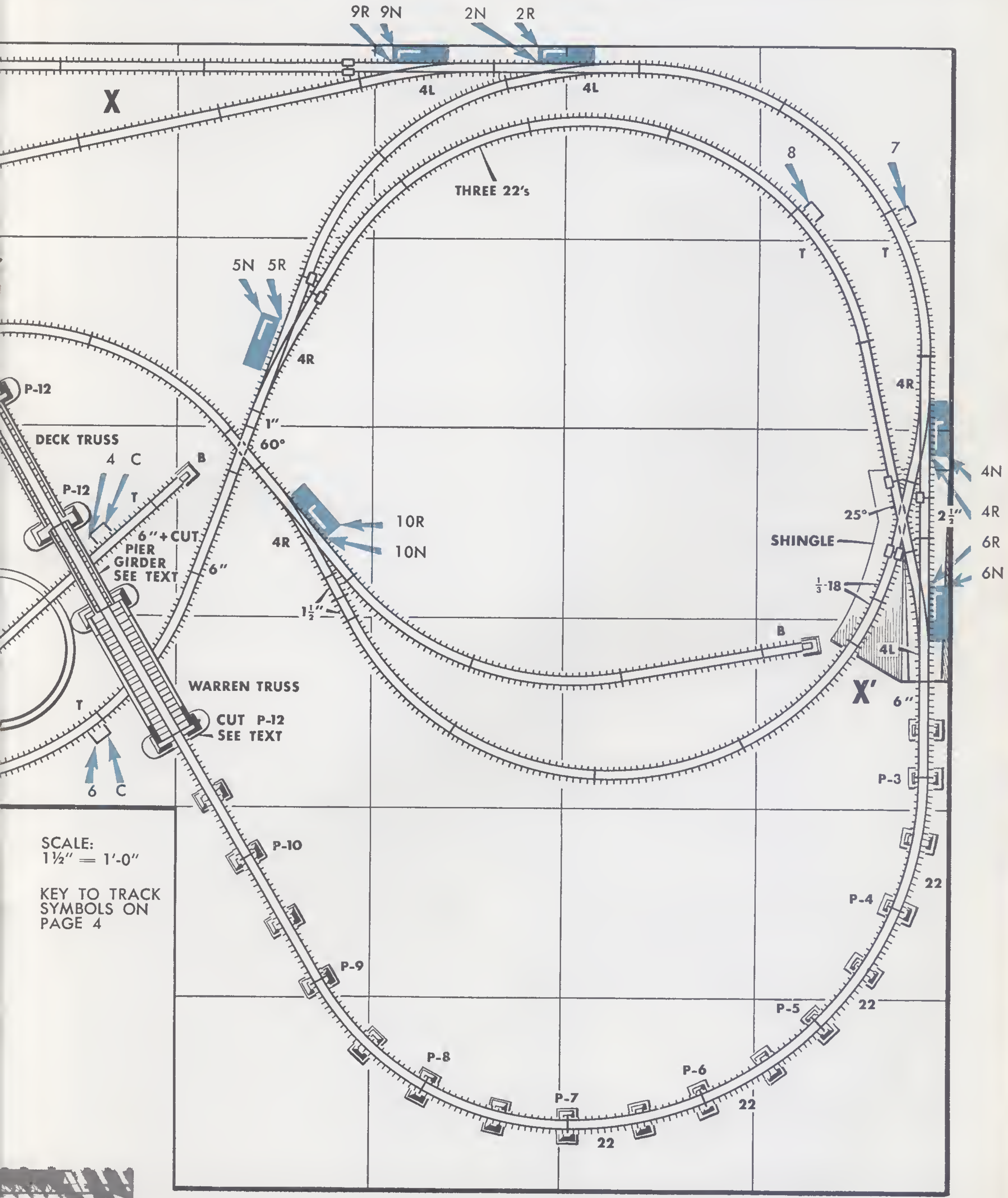
RAILROAD D

Transbay Interwoven

No single-level layout, no matter how large or elaborate, can provide the thrilling sight of one train passing over another. That's why a logical early step in developing a railroad past the one-sheet-of-plywood stage is to provide an up-and-over section of main line. The Transbay Interwoven does this in the simplest possible fashion by taking advantage of the easy construction of elevated track provided by the Atlas Pier Set. It's possible to get one track up, over and down again in a 4 by 6-foot area, but the result is a layout so full of track that little effective scenicking is possible and there is very little opportunity to work in sidings to provide operating interest.

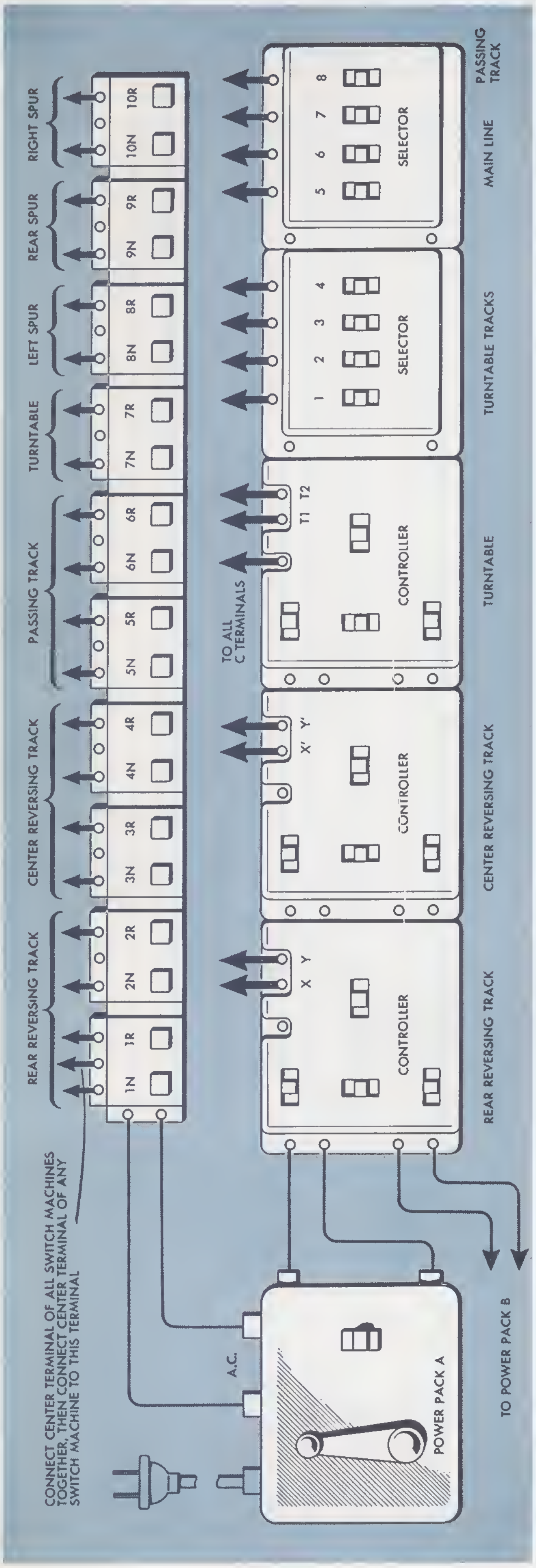






SCALE:
1½" = 1'-0"

KEY TO TRACK
SYMBOLS ON
PAGE 4



Therefore, the Transbay is planned as a "twin 4 by 6," occupying two such panels or platforms. It is logical (and easy with Atlas track) to consider this as an expansion of an existing 4 x 6 foot railroad (such as the Simplicity and Great Plains described earlier in this book) or as a built-from-scratch pike. In the former case, use of solid plywood top construction is likely; if the line is built all at once, framed-top construction (see page 14) is a somewhat preferable choice. The list of material requirements on page 27 includes both, so take your pick.

If solid plywood top construction is used, the two sections are held together with wood cleats screwed to the lower surface of the two plywood slabs. If framed construction is chosen, husky loose-pin hinges are about as simple and accurate a way of doing the same job as you'll find — see photo on page 34.

In either case, once the foundation is assembled, give it a coat of flat, light gray paint and assemble the entire trackage on the platform. Omit piers, and use a 9″ straight section borrowed from one of the spurs as a stand-in for the deck truss bridge for the moment. Mark centerlines as shown on page 7. Except where there will be piers or bridges, take up and set aside the track and proceed to lay cork roadbed as shown on pages 9 and 10.

USING ATLAS PIERS AND BRIDGES

Reassemble the track (with all plastic rail joiners in place as called for), check its alignment and fasten it down on the cork roadbed. Now the piers from the Atlas 47-piece set are slipped in place on the track as called out in the diagram on pages 24 and 25. In between pier 9 and pier 10, for example, use another pier 9 with the separate ⅛″ riser tabs slipped into place atop it to support the track in an even ascent; the same arrangement applies from P-2 up past pier 10. Piers marked 11 (the pier number is molded in the plastic inside the pier) are not used; instead, two No. 12 piers are cut down in height by sawing ¼″ off their bases. A razor saw is fine for this job, any rough edges being trued up with a file. The standard 9″ pier girder from the pier set is cut down to 6″ length as shown below, and then the series of bridges called out in the diagram can be assembled on their piers. Fasten all piers down with the small nails, once you are satisfied with the alignment of the whole up-and-over section of the railroad.

At the right side of the layout, the piers numbered one and two in the series cannot be used because a turnout is needed right where they would normally be located. To make a smooth approach to the grade with solid support for the turnout and crossing, use a regular cedar shingle underneath the cork roadbed; the thick end of the shingle, of course, is toward the piers. To get the curved track at X′ back down to base level, use another piece of shingle with its taper in the opposite direction. This piece is also placed under the cork roadbed and extends up to a meeting with the first piece directly beneath the 25° crossing, making a smooth up-and-down curve for this track.

WIRING THE TRANSBAY

This little railroad has two reversing tracks (X-Y and X′-Y′) so that a train going around the mainline figure-eight in either direction may be reversed in direction of travel by taking one of these branches. There is also a turntable. As the electrical diagram on the opposite page shows, these ordinarily-tricky wiring problems are taken care of without fuss by the use of three Atlas controllers. Follow the diagram carefully, checking out the system by running a train after adding each wire, and you should have no trouble.

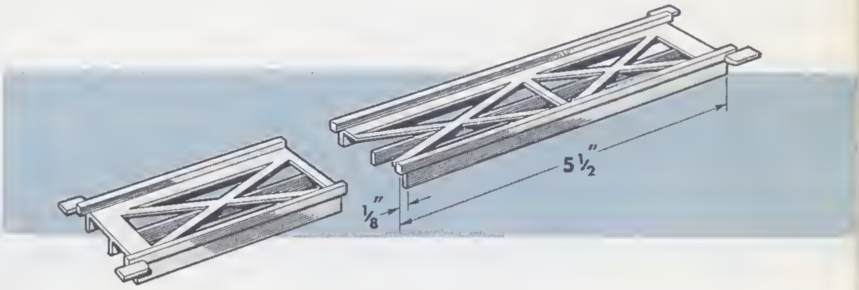
As you will find by experimentation if you haven't figured out the exact whys and wherefores of two-rail circuitry, all that is necessary in traversing a reversing section is to flip the reversing switch for the cab you are using (the upper left slide switch on a controller for Cab "A," for example) *while the train is completely within the reversing track.* The polarity of the main line when the train re-enters it will then be correct and it will go on its way without a hitch.

Before entering the reversing section, the X-Y direction switch on the controller is set for the direction in which the train is to pass through the reversing section. To avoid some moderately strange changes in the position of this X-Y direction switch for a particular direction of travel, *always use the cab reversing switches on the controller farthest to the right on your panel*; leave the ones on the other controllers and on your power packs alone. This may sound a bit confusing, but don't worry — a few minutes practice will clear up the situation.

The electrical diagram for this pike shows no control panel track schematic such as we provided for Railroads B and C. This is because the Transbay is a fairly simple track plan and it will usually be enough to indicate on the panel the track sections and turnouts controlled by the various switches. Descriptive designations you might use have been given on the diagram. A control panel diagram is a nice looking thing, and always at least a bit handier to use, though, so if you wish go ahead and use the general scheme outlined on page 19 to make yourself a snappy map-type panel.

Scenically, the Transbay can be whatever you choose to make it, but some waterways to give a reason for the bridges and piers are almost a must. The flat-bed scenicking pointers in the Railroad A section apply. Operationally, the Transbay can make both through trains and local switching runs serving the industrial spurs look at home, so you have free rein to use most any types of buildings and structures that appeal to you. A railroad shop scene is most appropriate in the vicinity of the turntable, and this no doubt is the place where your switching crews tie up after a day's work out along the line.

SCENIC HIGHLIGHT OF THE TRANSBAY INTERWOVEN IS THE SUCCESSION OF ATLAS BRIDGES CARRYING THE MAIN LINE OVER VARIOUS LOWER-LEVEL TRACKS. EVEN ON A FLAT PLATFORM TOP THE EFFECT OF WATERWAYS CAN BE ACHIEVED BY LEAVING A BLUE-GRAY BASE COLOR EXPOSED AND OUTLINING IT WITH "EARTH" AND "GRASS" SAWDUST FLOCKING FASTENED DOWN WITH GLUE. THE RAILROAD LOOKS AS THOUGH IT IS IN PERIL FROM FLOODING BUT YOU CAN SAY THAT THIS IS A SHELTERED HARBOR WHICH IS ALWAYS AT HIGH TIDE.



USE A RAZOR SAW TO CUT A STANDARD 9" ALTAS PIER GIRDER TO THE LENGTH SHOWN, LEAVING THE TOP FLANGES PROTRUDING ⅛". THIS WILL THEN MATE UP WITH A 6" SECTION OF STRAIGHT TRACK TO MAKE A SHORT BRIDGE JUST THE RIGHT LENGTH TO SPAN ONE TRACK PASSING BELOW.

Atlas Track Praducts

9" straight section	19
6" straight section	4
3" straight section	1
Snap-track kit	1
Straight terminal section	4
Bumper	7
Full section 18" radius	31
Half section 18" radius	2
Third section 18" radius	4
18" radius terminal section	6
Full section 22" radius	7
No. 4 right-hand turnout	4
No. 4 left-hand turnout	5
No. 6 right-hand turnout	1
25° crossing	1
60° crossing	1
Atlas rail joiners	1 box
Plastic rail joiners	2 dozen

Atlas Piers and Bridges

Pier set	1
Warren truss	2
Deck truss	1
3" (No. 12) piers	3
Turntable	1
Turntable motor drive unit	1

Raadbed Material

Atlas cork roadbed (3 ft. sections)	16*
Atlas cork switch blocks, No. 4	9
Atlas cork switch block, No. 6	1
Standard cedar shingle, 12" wide or more	1
⅝" or ¾" No. 19 or No. 18 flathead wire nails	¼ lb.

*Note: if roadbed at turnouts is built up as shown on page 10, omit switch blocks and obtain 21 sections of roadbed instead of 16.

Electrical Cantrol Items

Single-train power suply with 16 v. A.C., 12 v. D.C. outputs, speed control, reversing switch and circuit breaker	2
Atlas controller	3
Atlas selector	2
Atlas remote-control switch machine	10
Atlas switch control box	10
Train power wire (No. 20 or No. 18, No. 18 preferred)	50 ft.
Switch machine hookup wire (No. 22 or heavier)	125 ft.

Foundation Material and Miscellanecus

5/16" or ⅜" plywood, 4 x 6 ft.	2 pieces
1" x 4" dressed white pine, "C or better," 8 ft. lengths*	3 pieces†
1" x 4" dressed white pine, "C or better," 6 ft. lengths*	4 pieces
1" x 3" dressed white pine, "C or better," 8 ft. lengths*	3 pieces†
No. 12 flathead wood screws 2½" long	2 dozen
No. 10 flathead wood screws 2" long	2 dozen
No. 6 flathead wood screws 1" long	5 dozen
5/16" carriage bolts 2" long, with washers and wing nuts	32
No. 8 common nails	1 lb.
3" steel butt hinges, loose pin, with 1" screws to match	1 pair
Light or gray or blue-gray flat paint	½ pint

*Nominal size 1" material, actual thickness and width about ¼" less.

†Includes 3 pieces of each size for making six legs, as shown on page 14. Omit these and carriage bolts if legs not required.

For solid plywood top construction, substitute the following:

⅝" or ¾" plywood, 4 x 6 ft.	2 pieces
1" x 8" wood, approx. 5 ft. long (cleat material)	2 pieces
No. 10 flathead wood screws 1¼" long	2 dozen

(Material for legs not included — see p. 7 for discussion on alternate ways of supporting railroad. Six legs (three pairs) recommended for this railroad.)

RAILROAD E

Granite Gorge & Northern

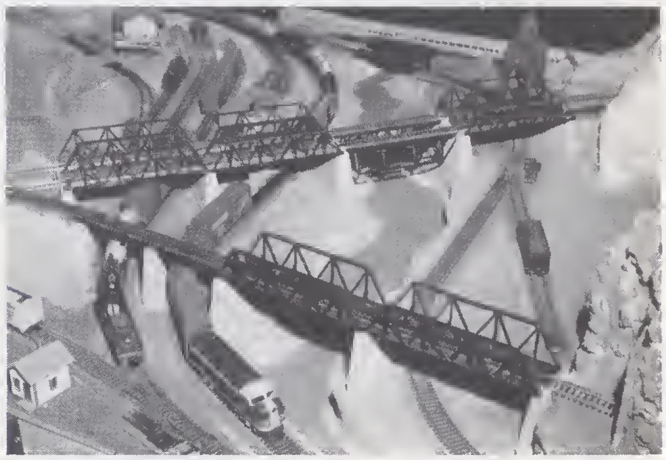
RAILROAD main lines, particularly in the more rugged and scenic parts of the country, are almost constantly rising and falling. Most of the time these grades are gentle — well below one percent (one foot of rise or fall in a distance of 100 feet) or else short enough that a train can pass over them by momentum gained on the level or downgrade portions of its journey. The differences in elevation among tracks thus reached, however, not only allow lines to pass over and under each other but make for interesting scenes of the type really worth attempting to portray in a model railroad. Doing this requires something more than a simple flat-top table, so the Granite Gorge and Northern secures its varied grades and contours by "deformed plywood top" construction.

This is actually a very quick and easy way to secure smooth though varied grades in a layout and provide a great deal of freedom in its scenic treatment. One reason this type of construction is not too widely used is that a good deal of detailed planning and calculation is essential before construction can safely begin; major mistakes in planning can be real problem children once the plywood has been cut. In this case, though, the engineering has been done for you and checked out by actual construction (yes, there were some boners in the original drawings, but they've been corrected) so you can proceed with confidence to build what is in truth a fairly advanced type of railroad. Since the use of Atlas Track throughout allows checking the complete track plan before slicing up the top, whether or not you've previously built a layout you can count on success with this fellow.

First, though, a word about the track plan. The GG&N represents the crossing of two double-track main lines in a narrow river valley where the rough terrain has forced the use of a profusion of bridges and tunnels to get the rails through. Connecting tracks allow trains to pass directly from one line to another, while a small yard on one line handles cars being interchanged between through and local trains or between the two main routes. The lower-level main tracks temporarily separate from each other because of the crowded conditions in the narrow valley and run on opposite sides of the river — a prototype situation that occurs at a number of places on both Eastern and Western railroads.

This railroad is primarily intended to provide a realistic setting for operating through trains; there are two industry sidings and the little yard can be kept busy making up and breaking up local freights, but if you get most of your fun from tricky single-track dispatching exercises or lots of switching, there are other track plans that will do more for you than this one. For watching 'em roll, the Granite Gorge hits the spot.

The track plan takes advantage of the standard size of ping-pong table to utilize the 5 x 9 ft. sheet of plywood available in most of the larger lumber yards. This is too big a slab to get into and out of most basements and spare rooms, so the railroad has been designed in two 4½ by 5 ft. halves. You will also find building the layout more convenient if you buy the plywood in two pieces.



PRINCIPAL SCENIC FEATURE OF THE GRANITE GORGE AND NORTHERN IS THE CROSSING OF A STEEP-WALLED GORGE BY SINGLE AND DOUBLE-TRACK BRIDGES IN VARIOUS COMBINATIONS. ALL BRIDGE AND PIER UNITS ARE ATLAS ITEMS, INSTALLED WITH ONLY MINOR MODIFICATIONS TO ACHIEVE THE VARIED APPEARANCE TYPICAL OF SUCH RAILROAD-CROWDED BOTTLENECKS IN THE MOUNTAINS.

Scenicking by Bob Clarke.

EVEN WITH PARTIALLY-COMPLETED SCENERY, THE RAILROAD TAKES ON THE DRAMATIC APPEARANCE OF THE REAL THING AS EXPOSED ROCK FACES APPEAR IN CARVED PLASTER, LICHEN BUSHES ARE ADDED, THIN TURPENTINE WASHES TINT "ROCK," "SOIL" AND "GRASS" IN THE RICH, GRAYED TONES OF NATURE. A BRONZED-GREEN WASH APPLIED OVER UNFINISHED PARTS OF THE MOUNTAIN GIVES AN AIR OF COMPLETION WITHOUT INTERFERING WITH LATER TEXTURING AND DETAILED COLORING OF THE SURFACE.

To start construction, lay the plywood out on the floor and assemble the principal tracks of the plan (all the trackage except a couple of the spurs) on it. Substitute the straight sections from the spur tracks for the deck trusses so that the entire system may be lined up properly. The center-to-center distance between the double tracks on the bridges at 2⅝"; see that this is the case, and that the points at which the track lies near the edge of the plywood correspond with the diagram. Use a yardstick to see that straight sections of line are really straight, and adjust the curves so that there are no kinks and no places where the center-to-center distance is less than 2¼". Notice on the diagram where the double-track bridge piers cross the lower-level tracks and then adjust the position of both levels if necessary so that the piers will not obstruct traffic.

When it looks right, tack the track down temporarily with the small nails. Mark the center line as shown on page 7 and in addition, using a pier as a template, mark the outline of the pier bases. With the track still in place, consult the diagram on pages 30 and 31 again and, using the track as a guide, sketch in the plywood saw-cut lines. The exact course these lines take is important only at a few points: where they are to be next to the end piers of a string of bridges; where they are close to a track (remember that the cork roadbed is two inches wide); and at points where the dimensions are given. At all other points you can draw them in pretty much as you wish — you undoubtedly will want to give some individualism to the shape of your river banks, but just don't undercut the pier locations.

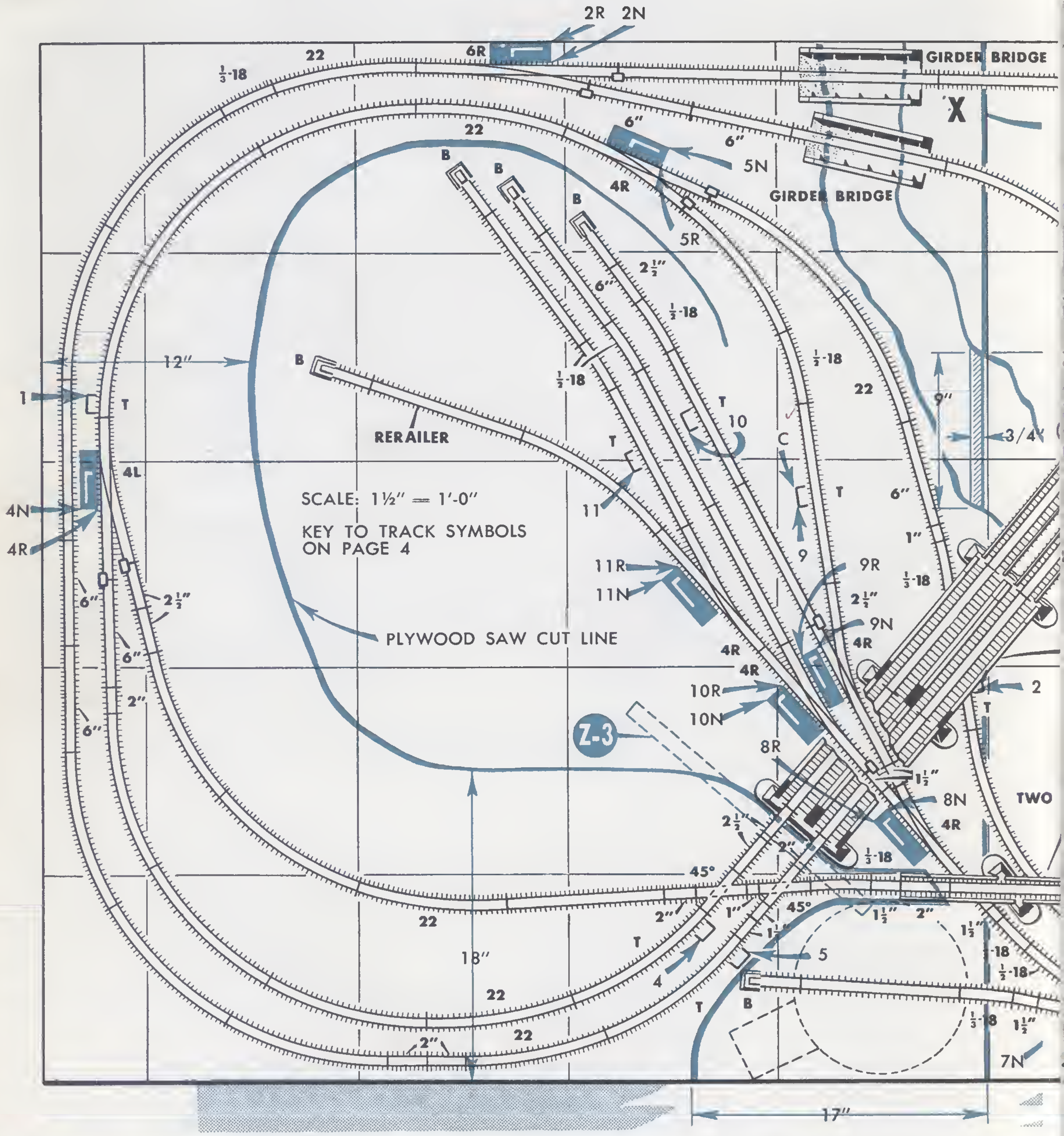
Take up the track temporarily and set it aside. Saw the plywood along the line, using a keyhole saw or, if you have or can borrow one, an electric saber saw. The two pieces of "river" will separate from the rest of the sheet, as will the corner sections on the opposite side of the stream; the rest of the plywood will hang together but is now in flexible form ready to be deformed into the hills and valleys supporting the various tracks.

ASSEMBLING THE FRAME

Stand the plywood out of the way against the wall and attack the pile of 1 by 4's as directed by the piece-part sketches on page 32. Our bill of materials on page 38 calls for an extra length of lumber so that you won't be frustrated if a knot happens to come in a bad location in the 15th piece; save all short ends resulting from your operations — there will be plenty of use for them in completing and scenicking the railroad. Nail the secondary pieces (0-1, etc.) atop the principal members before starting frame assembly.

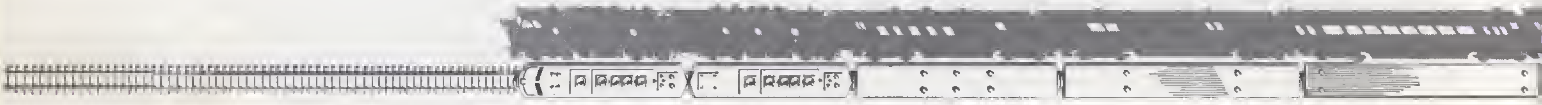
Nail and screw the frame halves together as shown on page 33. Drill holes for all screws — a combination pilot drill that takes care of making the proper size hole for the thread, shank and head of the screw in one operation is

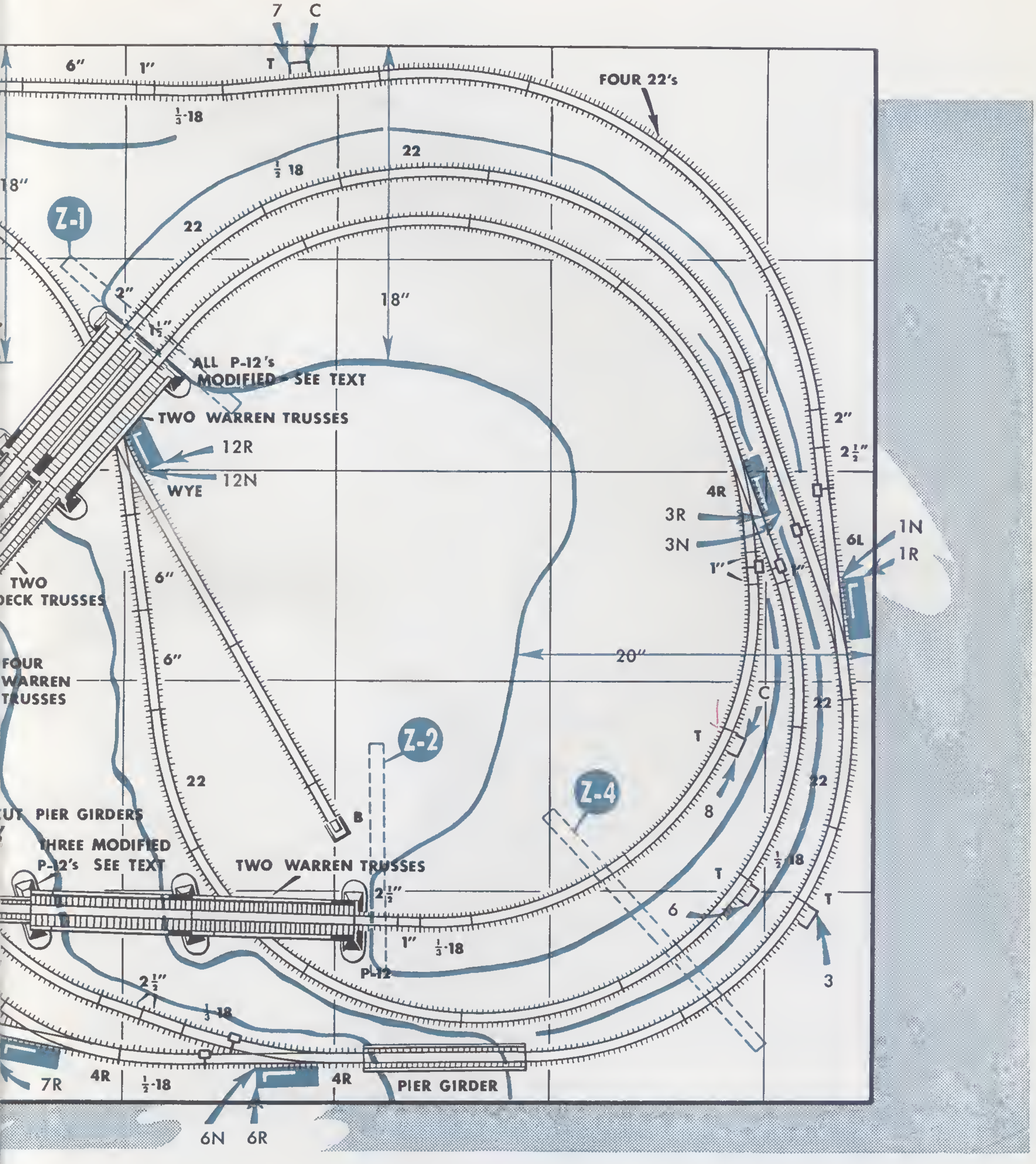
(Text continued on page 34)



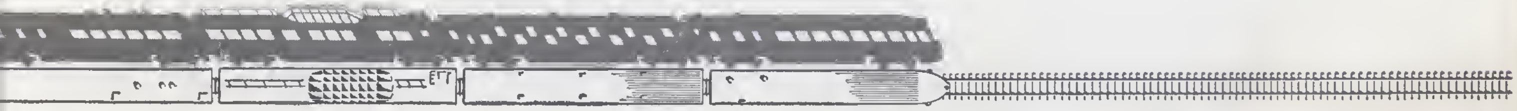
As indicated by the dashed line, an Atlas turntable can be fitted into this railroad at the entrance to the little yard, enabling you to turn yard and local freight locomotives working out of this terminal. To squeeze it in, it is necessary to build a vertical retaining wall along the approach to the high-level bridge spanning the valley.

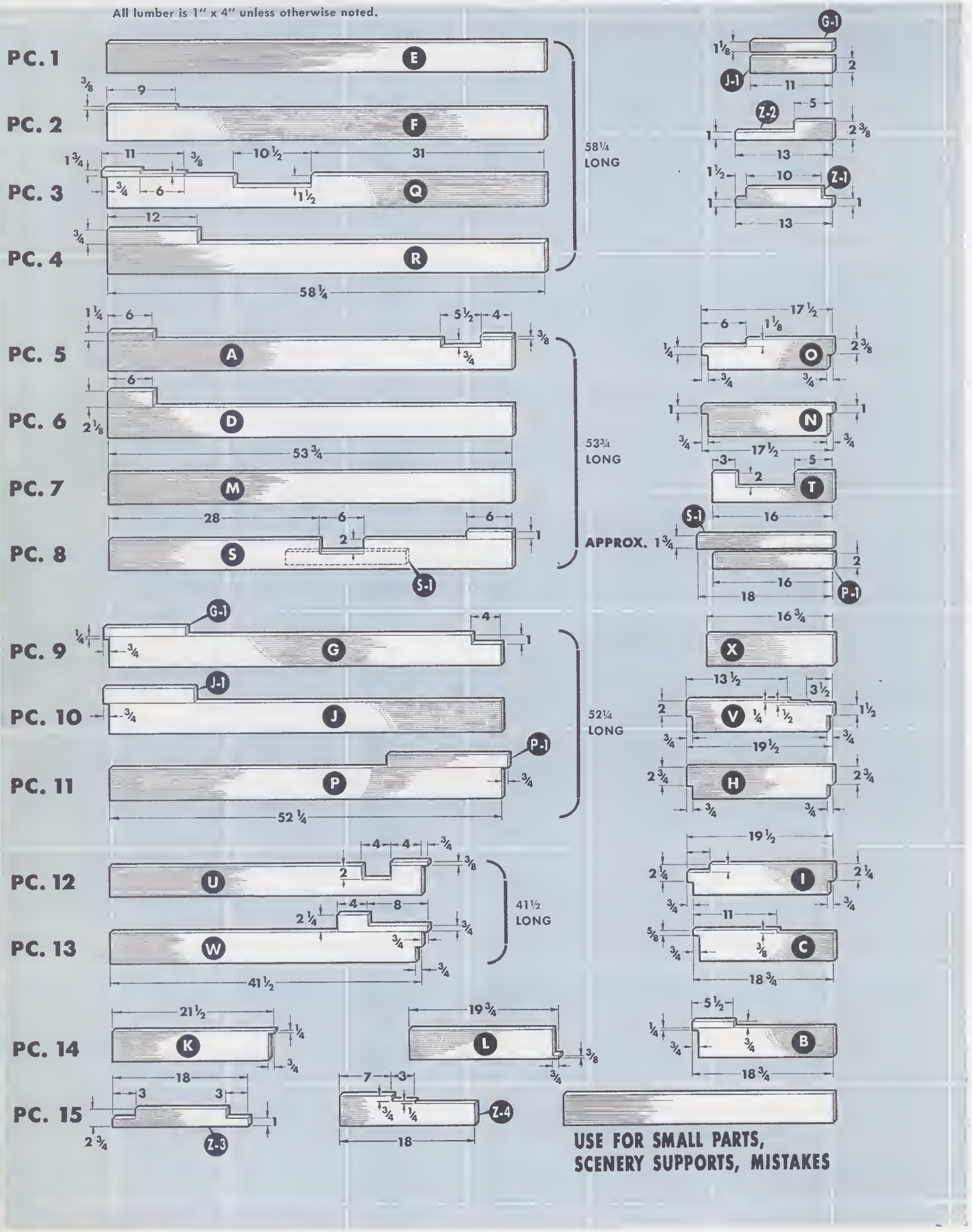
To rewire the layout to accommodate the turntable, add an Atlas controller to the left of the three selectors used on the regular control panel (page 39). Wire this up to the turntable exactly as in Railroad B, page 19.





Note that the piers under the long single-track bridge must be skewed to clear the tracks below. To permit this, the ears on top of the pier which normally slip over the track are sawed off flush. A two-span bridge of the right length to span the yard tracks is made by cutting two pier girders on the bias and fitting them together with the cut ends supported by the skewed center pier. This pier is shortened at the base to fit, a matter of about ¼". At the left end of this bridge a retaining-wall abutment, made of heavy cardboard or ¼" wood, is used instead of a pier.

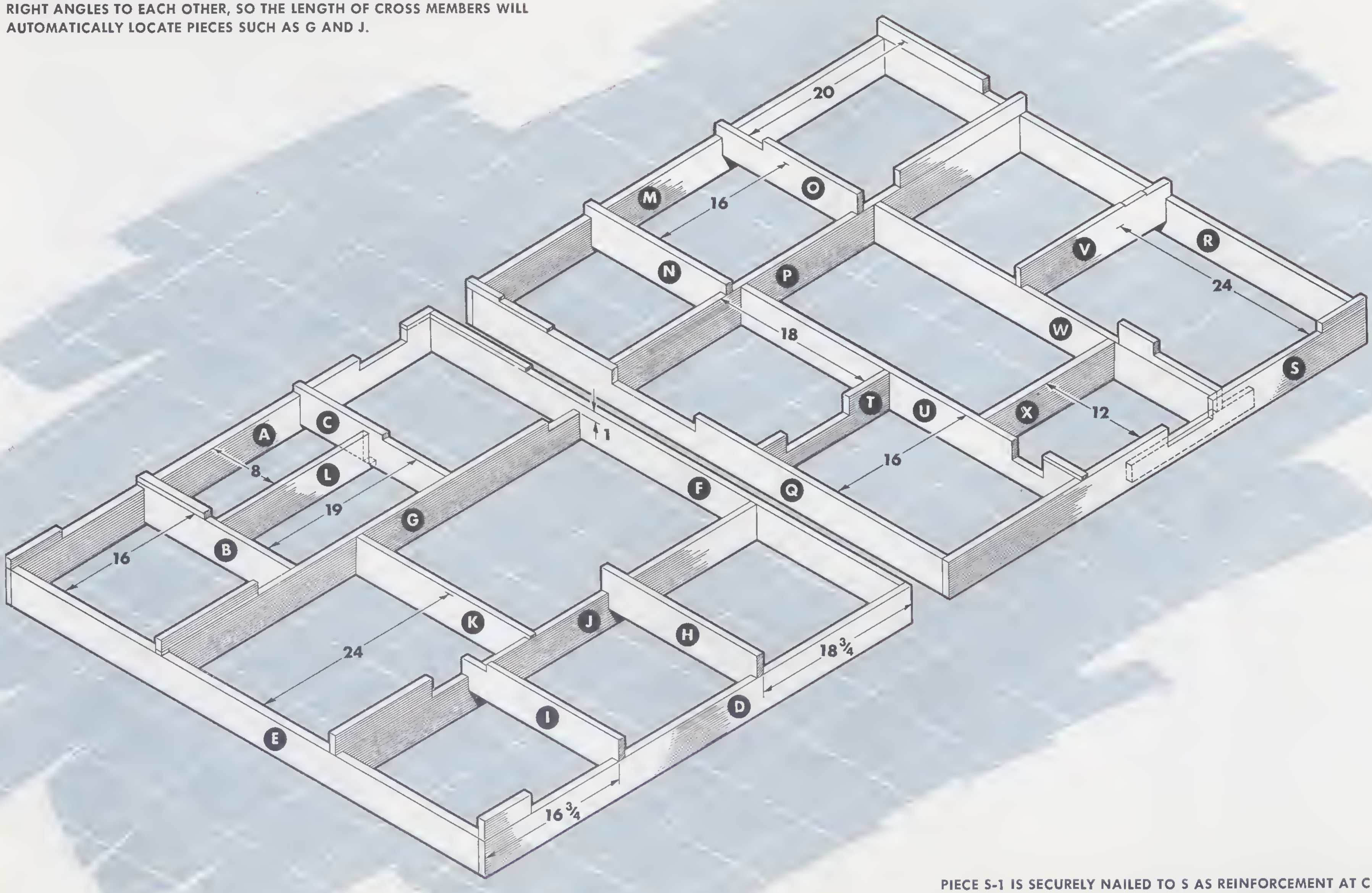




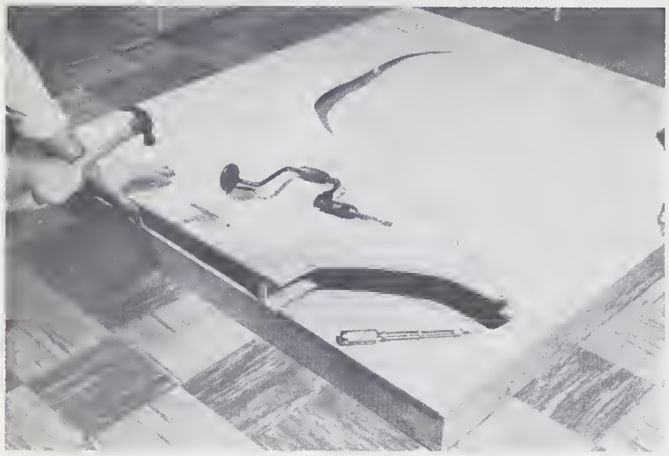
All lumber is 1" x 4" unless otherwise noted.

USE FOR SMALL PARTS, SCENERY SUPPORTS, MISTAKES

ASSEMBLE THE BASIC GRID FOR THE GRANITE GORGE AND NORTHERN AS SHOWN, KEEPING THE TOP SURFACES OF THE MEMBERS FLUSH AT ALL JOINTS EXCEPT WHERE OTHERWISE INDICATED. FOR EASIEST ASSEMBLY, WORK IN ALPHABETICAL ORDER. ALL MEMBERS SHOWN HERE ARE AT RIGHT ANGLES TO EACH OTHER, SO THE LENGTH OF CROSS MEMBERS WILL AUTOMATICALLY LOCATE PIECES SUCH AS G AND J.



PIECE S-1 IS SECURELY NAILED TO S AS REINFORCEMENT AT CUT-AWAY SECTION; DO THIS BEFORE ASSEMBLY. CORNER JOINTS ARE MADE WITH THREE 2½" NO. 12 WOOD SCREWS; OTHER JOINTS ARE HELD TEMPORARILY WITH NO. 4 FINISHING NAILS AND THEN PERMANENTLY SECURED WITH ONE 2" NO. 10 SCREW AND TWO NO. 8 COMMON NAILS.



SQUARING UP FRAMEWORK

handy, particularly for the No. 12 screws used at the corners of the frames to make the point of attachment of the legs rigid. A screwdriver bit for your brace will make setting the screws much less of a chore.

If you are planning to attach legs to your railroad, now is a good time to drill the bolt holes through legs and frame members — see page 14. Four legs are fastened to the corners of one half, which then supports the second two-legged section. You'll probably find it more comfortable to leave the legs off at this time, however, and do the next construction steps with the railroad on the floor.

At this point the frame has nothing to keep it square and is not very rigid. Therefore, it is possible to make it conform to the shape of the plywood top and end up with a square, true foundation. First, fasten the edge of a plywood sheet that will lie along the central joint in the railroad to its corresponding frame member (F or Q) with the No. 4 nails, being careful to have its edge flush with the outer surface of the frame rail. The plywood is designed to overhang the frame about ⅛″ on the sides and outer ends, so allow for this in getting it centered on the frame. Do this on only one half of the layout at this time.

Now, as shown in the picture above, square up the frame so that there's the same amount of overhang at all edges and drive in a nail or two to hold it that way. Then use the No. 6 wood screws to secure the plywood to the frame. Put a few in at various points around the frame and then go back and anchor the top at about one foot intervals along each frame member. At some points where there is more strain as the plywood is bent into shape you will want to put them closer together.

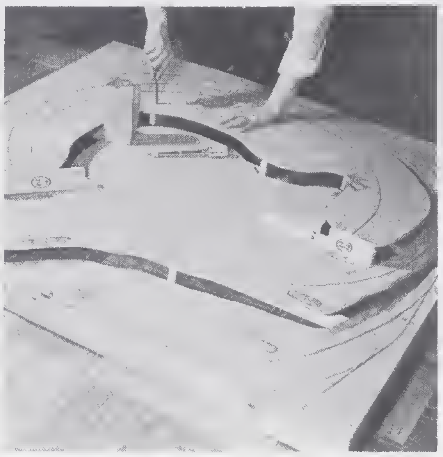
At this point, fasten the other half of the railroad (a frame only, so far) to the plywood-clad half with the pair of hinges called for. Clamp or otherwise secure the two center rails of the layout halves firmly together while setting the hinges. Then apply the plywood to the second half, squaring it up in the process. This procedure lets you get a close, level joint between the two plywood surfaces. Now you can take the pins out of the hinges and separate the halves, assured that they'll go back together accurately when the time comes.

When the second half is also firmly covered with plywood, install frame pieces Z-1 through Z-4. These are floating members, not attached directly to other frame parts but rather to the plywood. Their location is called out on the track diagram on pages 30 and 31. Z-1 and Z-2 are shown in the photo below; like Z-3, they secure the plywood directly behind the pier locations. Since Z-2 sticks out into space, use plenty of screws through its panhandle to provide a rigid support for the track at this important point. Z-4 goes underneath the plywood and ties three different levels together so that each will get support from the other and be rigid enough to take the hammering necessary in laying track. Use No. 10 screws to secure it.

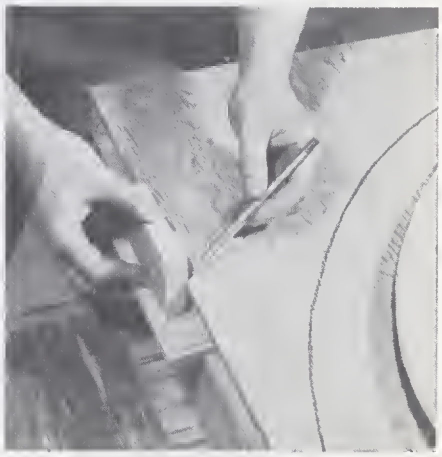
By now the structure has become surprisingly stiff and solid, except that at some points around the edge the ⅜″ plywood needs more support. You can tell where by trying to drive a small nail into the plywood — if it doesn't hammer in easily, the top is too flexible for easy track-laying. Use some of the short pieces left over from frame construction as filler blocks. To get a good fit easily (since by now the plywood is tilted at various odd angles), hold the filler block and a piece of the plywood against the layout as pictured below, draw a line along the top surface of the plywood, and you have the proper saw line for a snug-fitting filler-support between frame and plywood.

Note that in fitting the piece of plywood that forms the river on the left half of the railroad into its notches it is necessary to remove a strip ¾″ wide from the end adjoining the center joint. This leaves the center rail of the layout protruding above the surface of the river, so that it can later be scenicked to look like a dam — a sneaky way of getting around the problem of concealing a joint in a waterway. Nail a block of wood to the center rail of the frame under this end of the plywood "river" to give it added support, but don't fasten either part of the river surface down permanently. It will be much handier later on to attach the screen wire forming the stream banks to the plywood on the bench and then install the assembly at one time.

HINGED JOINT



SCREWING DOWN TOP



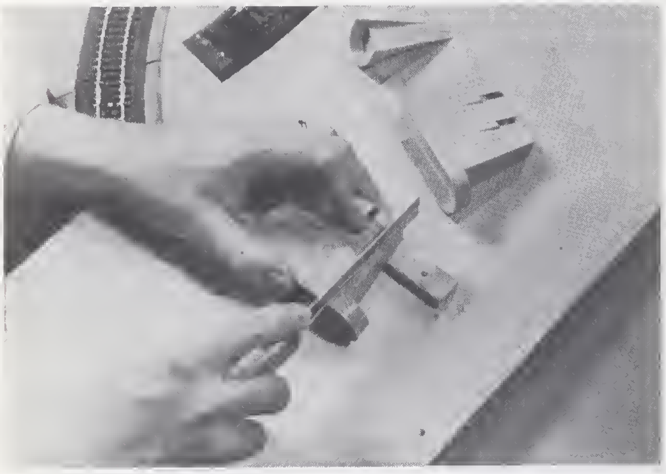
MARKING FILLER BLOCKS

INSTALLING TRACK AND BRIDGES

The cork roadbed comes next and is laid as described in connection with the section on Railroad A. Where bridges start, leave an inch or so of cork sticking out into space so that it can be fitted neatly against the piers when they are installed. If the plywood has not been painted previously, give it a coat of flat gray or brown paint before laying the cork. Leave the track centerlines unpainted, extending the paint just close enough to be sure its edge will be covered by the roadbed.

Lay the cork right across the center joint, so that it is sure to be in line, and then cut it apart right at the joint. Chances are you'll never take the railroad apart, but it is nice to be prepared.

Start laying track at the right-hand end of the layout, but do not fasten any of it down until you have it assembled up to the point where it joins with the Warren bridges atop the Atlas piers, because this is where it is necessary to have it in the correct position if we are not to run into trouble at the other end of the string of bridges.



CUTTING PIERS

To adapt the single-track Atlas piers to our double-track line, they must be cut as shown in the picture. Use the last line of joints in the stonework at the side of the pier as a guide for your razor saw, and you will have piers that are just wide enough that when butted together the Warren spans are held next to each other. Use a block of wood nailed to your bench as a stop to hold the pier against while you saw it. Make up five pairs and cement the halves together with polystyrene cement of the type sold for assembling plastic models.

Later on, the track will be extended on across the piers and bridges onto the left-hand side of the layout and fastened in place as soon as the left-side loops are connected up and known to fit. The foundation has been designed so that a little shimming of the base of the piers will be required to get a smooth transition from the upgrade approach to the bridges to the level track of the center spans. This is easier than it would be to make the necessary adjustment by trimming them off. Use cardboard for the job.

It's a little better from the standpoint of possible damage to the bridges, however, to stop tracklaying as soon as the positioning of the sections adjoining the bridges has been accomplished and do the heavy scenicking first. Test out the track that is going to be hidden, and attach wires to all terminal blocks and switch machines in this section, passing them down through holes in the plywood so you can easily tie into these circuits when wiring the railroad for full operation. If you like mysteries, don't bother to number or otherwise identify them.

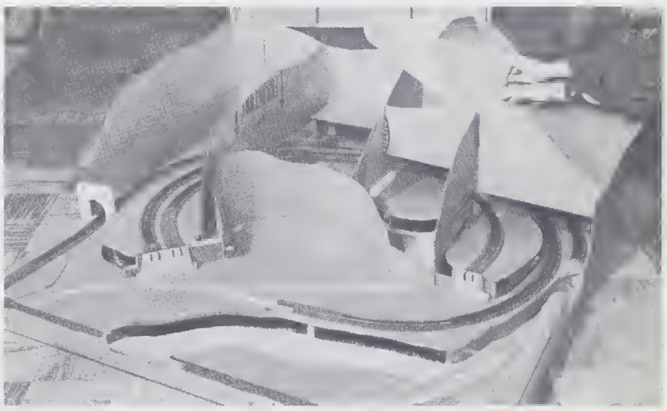
SCREEN AND PLASTER SCENICKING

For the Granite Gorge and Northern a slight twist to the usual methods of mountain building has been introduced — corrugated cardboard is used to build an egg-crate style framework supporting the screen wire. This results in a light, adequately rigid structure that is considerably neater in exterior appearance than the customary nightmare of scrap lumber. You can't beat the price of the basic material, either — if you aren't already harboring a suitable large corrugated cardboard box of the type used to protect furniture or appliances during shipment, your house is more junk-free than average. A good source of containers providing large enough pieces to do the job with a minimum of joints is the bedding department of a furniture store; one side of a mattress carton will more than do our job.

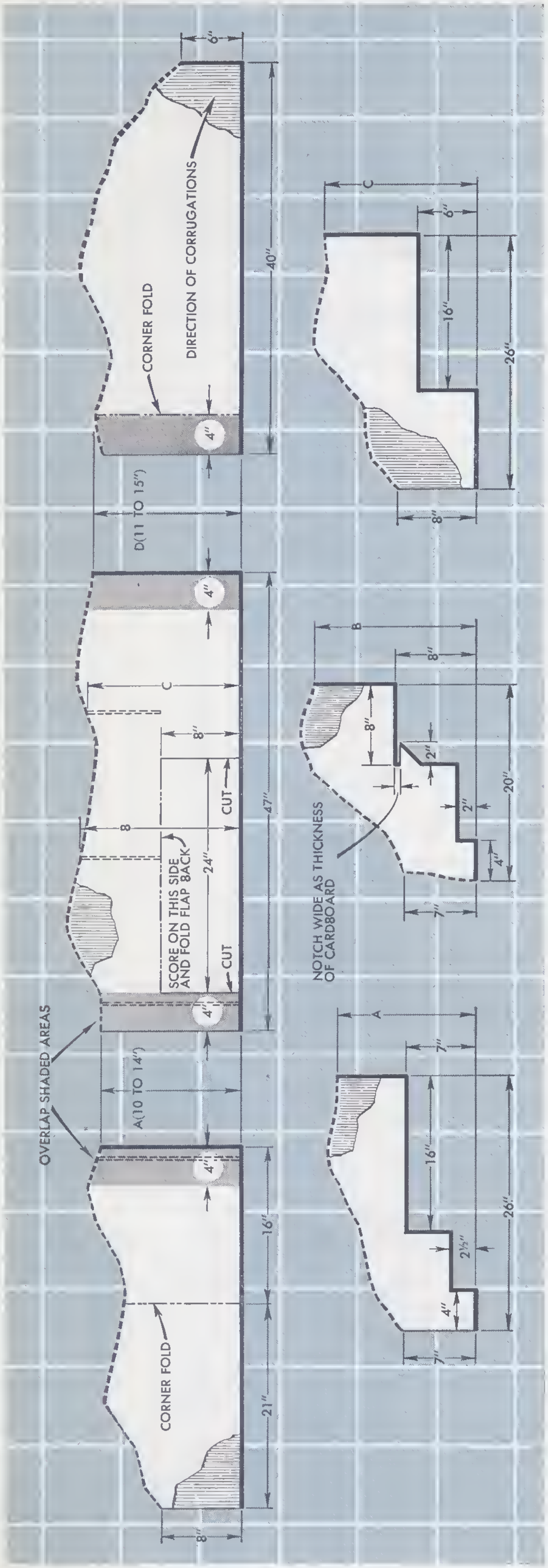
To make an ordinary long story short, framing for the big mountain that is the distinguishing mark of this railroad is laid out and cut from the corrugated material in accordance with the drawings on the next page. Naturally, you don't want your mountain to be just like anybody else's, so you will alter the shape of the dashed-line portion of the parts as you see fit. Also, while a mountain of the height on the pictured layout is wonderfully impressive, it may be necessary for portability reasons to settle for something a bit lower, and alternate dimensions are shown which represent the lower limit you might go to if you must. In case of doubt as to just what will go through the door or up the stairs, build the framework high and try it out — a pair of snips will correct the situation in a jiffy.

The assembly of the parts is evident from the photo below. One-inch flat head nails attach the outside parts to the frame of the layout. Since one piece of cardboard extends around each corner, the structure is surprisingly stiff once both sides are attached to the frame. The center section is spliced to the corner pieces with No. 4 paper fasteners. No. 8 common nails are pushed through the outside members into the mating interior partitions, which are nailed either to the edges of the raised portions of the plywood top or to wood blocks nailed to the plywood.

Additional interior members, not shown in the drawings, are added as needed to make up an egg-crate with cells about 15" square (some eggs!) and trimmed to fit at the top. Incidentally, while snips is the tool to use in making minor corrections in parts already in place, a modeler's knife is the tool to use to cut out the parts in the first place. A vertical wall has been added to frame a quarry extending into the exposed side of the mountain; such members are secured by impaling their vertical corruga-

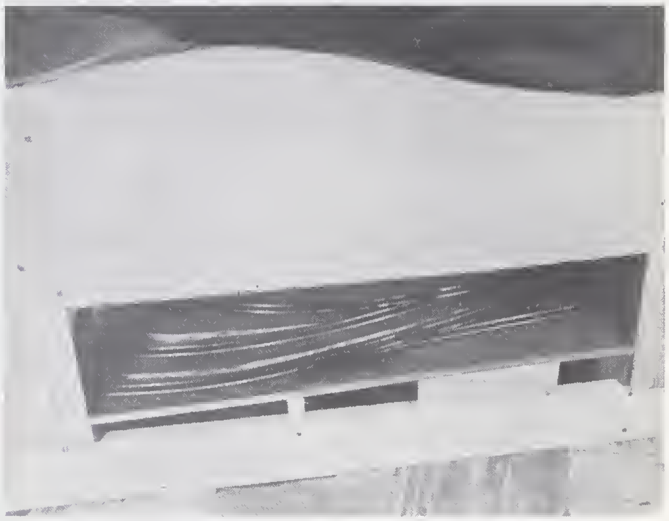


CARDBOARD FRAMEWORK



tions on large finishing nails projecting up from the plywood.

Similar but much smaller cardboard frames are built up on the other half of the layout; some idea of the shape of hills we used is given by the pictures, but wide variations are possible and in order. Next comes the screen-wire covering. The general idea is somehow, in a more or less catch-as-catch-can fashion, to cover the frame so that the resulting contours resemble the mountain shape you have in mind. It's impossible (and fortunately unnecessary) to describe the process, but the actual work seems to come easily to almost anyone who tries it. The No. 8 nails are used to attach the wire to the cardboard; double tacks (staples) do the job where it contacts the plywood. To splice strips of the screen together as needed to cover the whole affair, stick the double tacks through both pieces and bend their points together on the inside with pliers. Of course, the stuff won't conform to all the compound curvatures of the mountain without encouragement, so you take tucks in it by folding it, pinching it in pleats, or snipping out pieces. If you can work efficiently with gloves on, this is a good time to wear them, as the sharp edges are mean. Otherwise, you'll just have to keep the antiseptic handy.



SWITCH ACCESS HOLE

Two artistic comments on the process are in order. First, be careful to shape the screen so that it does not so closely conform to the shape of the supports that they will show up as ridges in the finished scenery. Secondly, where rough rock is being modeled, shape the screen (with your fingers) as violently as you can so as to give the plaster texturing a head start. This has been done on the quarry face in this layout — see page 39.

Ordinarily, concealed turnouts such as the two at the right end of this layout would be considered extremely undesirable. However, with reliable Custom-Line trackwork and switch machines, which can be adjusted entirely from above the trackboard, and the arrangement shown in this photo for maintaining access to the hidden trackage, there's no real problem. Note that the flap folded back from the outside cardboard member serves both to stiffen the structure and to roof-over the access space neatly.

At tunnel portals, the screen is clipped to leave an opening a quarter of an inch or so smaller than the portal and then bent to form a flange fitting closely against it. Commercially-available portals cast in plaster have been used here for the single-track bores, but homemade ones were jigsawed from 1" wood for the double-track lines. These have an opening 4½″ wide by 3″ high; all available commercial ones, scaled from prototype tunnels on straight track, won't clear long equipment on our sharp curves. The wood portals have the advantage that the screen can be tacked to them.

Next comes the plastering. Every model railroader seems to have his own favorite mix for the job, and the truth seems to be that most all of them are satisfactory and have some particular points in their favor. Therefore, if you have your own favorite already, or know some more experienced modeler who has one, go ahead and use it. The mix described here is known to last indefinitely without cracking or deteriorating, is moderately light and strong, neither the cheapest nor the most expensive, and has both strong and weak points with respect to ease of application.

First, make sure that there are no wide gaps in the screen wire, either where screen is joined to screen or to the layout. Any gaps over about $\frac{1}{16}$″ will be somewhat hard to fill and will use up considerable mix in the attempt. Use plenty of staples or tacks and small supplementary pieces of screen if necessary. At the edges of the layout, fold the screen under in a sort of hem, to make a neat edge that won't snag your clothes. Next, remember to cover all track beneath the screen with newspaper.

To start the process, mix spackle (also known as spackling or spatchtling compound) with water in a bowl, not over a pound at a time. At first, make a fairly thick mixture — like dough. Add about ¼ ounce of tinting color of some dull, earthy nature — such as burnt umber — to a pound of the mix and stir until uniformly distributed throughout the mass. This tinting color can be water-base or oil-base. Then thin the mixture out with more water until it is about the consistency of coffee cream.

Use this thin mixture to paint the screen. Apply it with a brush, not a paddle, about 1 or 1½″ wide, and do not worry too much about getting it to cover 100% of the surface. In an hour or two, this first coat will have set and although it is extremely thin, the wire will have been stiffened amazingly. Let it dry for a day, though, before applying the second coat.

The second coat is similarly compounded, except that it is kept much thicker. It should be about the consistency of soft frozen custard, and is applied, in a layer about ⅛″ thick, to the previously-coated screen, using either a brush or paddle. The first coat has filled the holes in the screen and thus the second coat stays on the front side where you want it. This second coat will harden in a couple of hours to a smooth, hard surface that is satisfactory for grassland, as a base for a forest, or for any other nonsculptured surface. The spackle, unlike plaster, sticks to everything it touches and is very slightly flexible. In this ⅛″ thick form it is light but amply strong for large expanses of scenery.

The purpose of adding color to the mix is two-fold. First, it will keep you from being blinded by the glare of a raw white surface until you get to the point of painting the scenery — which may be a longer time than you think. Secondly, if some of the grass or painted surface ever gets chipped away, the exposed surface will be of earthen color and no eyesore.

Areas which are to represent rock cliffs or other highly-textured surfaces are treated to a third coat of a similar tinted half-spackle, half-patching plaster mix. This time it is left in a doughlike thickness and troweled on with knife or paddle. Dipping the tool in water helps to release it from the somewhat sticky mix, and will result in a smooth surface texture.

When the material has set from one to two hours it can then be worked into the desired rough contours and the various strata carved into its surface. A really detailed sculpturing job takes considerable time, so don't mix up too much at once (it's not reusable, and will not come out of your bowl, either, once it has hardened) or start a batch too close to bedtime. It takes a while to get the hang of scenic plastering, so make a couple of runs on small areas before you set out to do half the layout in one evening.

EVERY SELF-RESPECTING MODEL RAIL HAS HIS OWN SPECIAL SCENERY MIX. SOME OF THEM ARE QUITE EXOTIC . . .

Atlas Track Products

9" straight section	14
6" straight section	10
Snap track kit	5
Bumper	6
Straight terminal section	5
Rerailer	1
Full section 18" radius	32
Half section 18" radius	8
Third section 18" radius	8
18" terminal section	6
Full section 22" radius	15
No. 4 right-hand turnout	8
No. 4 left-hand turnout	1
No. 6 right hand turnout	1
No. 6 left-hand turnout	1
Wye turnout	1
45° crossing	2
Atlas rail joiners	1 box
Plastic rail joiners	2 dozen

Atlas Piers and Bridges

Pier girder	3
Deck truss bridge	2
Warren truss bridge	8
Girder bridge	2
3" (No. 12) bridge piers	14

Roadbed Material

Atlas cork roadbed (3 ft. sections)	30*
Atlas cork switch blocks, No. 4	9
Atlas cork switch blocks, No. 6	2
Atlas cork switch blocks, wye	1
5/8" or 3/4" No. 19 or No. 18 flathead wire nails	2 1/4 lb. boxes

*If roadbed for turnouts is built up from regular stock as shown on page 10, omit switch blocks and obtain 36 pieces of roadbed instead of 30.

Electrical Control Items TURNTABLE + CONTROLLER

Atlas selector	3
Atlas remote-control switch machines	12
Atlas switch control boxes	12
One-train power supply unit with 16 v. A.C., 12 v. D.C. outputs, reversing switch, speed control and circuit breaker	2
Train power feed wire (No. 18 or No. 20, No. 18 preferred)	75 ft.
Switch machine control wire (No. 22 or heavier)	200 ft.

Foundation Material

3/8" plywood, 4½" x 5 ft.	2 pieces
1" x 4" dressed white pine, "C or better," 6 ft. long	16 pieces
1" x 4" dressed white pine, "C or better," 8 ft. long	3 pieces†
1" x 3" dressed white pine, "C or better," 8 ft. long	3 pieces†
No. 12 flathead wood screws, 2½" long	2 dozen
No. 10 flathead wood screws, 2" long	4 dozen
No. 6 flathead wood screws, 1¼" long	7 dozen
No. 8 common nails	1 lb.
No. 4 finishing nails	1 lb.
1" No. 18 flathead wire nails	¼ lb.
Brown or gray flat paint	½ pint
3" steel butt hinges, loose pins, with mounting screws 1" long	1 pair
5/16" carriage bolts, 2" long, with washers and wing nuts	24†

†For legs; omit if other arrangements used for supporting railroad.

Scenery Material (Basic mountain structure only)

Heavy corrugated box material	Approx. 36 sq. ft.
Galvanized window screen, 28 or 30" wide	15 ft.
Spackling compound	Approx. 15 lb.
(Buy in 5 lb. boxes as needed)	
Patching plaster	5 lb.
No. 4 paper fasteners	Small box
3/8" (No. 5) pointed double tacks	1/8 lb. box
Tinting color — burnt umber	4 oz. tube

SCENIC PAINTING AND DETAILING

The hints and precautions for flat-bed scenicking given on pages 12 and 13 apply to three-dimensional work as well. The principal caution in painting up the plastered mountains is to stick with extremely thin turpentine washes (colored with tinting colors or oil paint) applying them repeatedly until the desired shade and color of tone is achieved. It is always easy to make the coloring darker; once it gets too dark, a complete refinishing job (starting with some opaque, light color followed with treatments to restore the flat surface texture and then to apply the proper tint) is the only way back.

The exception to the "things in nature are never shiny" rule is water. On the GG&N, the river's reflecting surface is imitated with a coat of blue paint over which green and brown washes are applied in the shoal areas. Varnish is then used, in as many coats as necessary, to give a shiny, transparent surface of some depth. The result is satisfactorily wet-looking.

PAINTING SCENERY

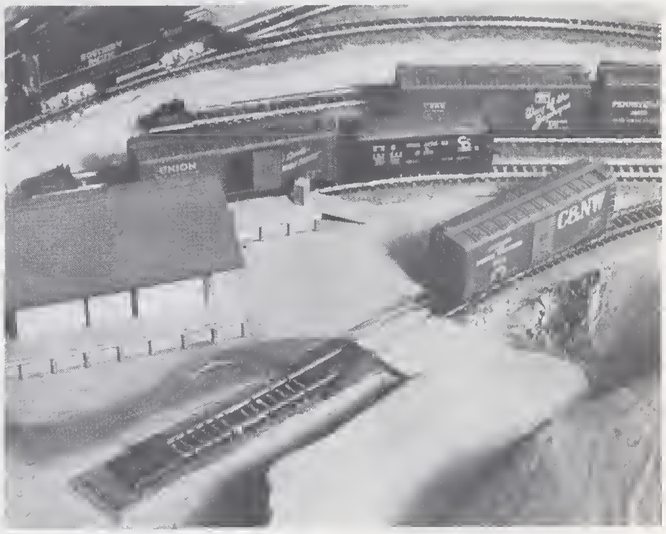
In this rock cliff scene, the ability of a thin turpentine wash to seep into and emphasize texture detail is being exploited. The wet appearance of the drip from the tiny spring above the portal was created with varnish. Grass texture comes from toned-down dyed sawdust flocking set in glue. Commercial trees and dyed lichen can also be made more lifelike by toning them down with the brown wash.

IT IS SOMETIMES BEST TO DO THINGS BACKWARD! THE QUARRY IN THE CENTER OF THE MOUNTAIN HAS FIRST BEEN REPRESENTED (BY ROUGH CONTOURING OF THE SCREEN WIRE AND SOME GRASSY-GREEN PAINTING) AS ABANDONED. LATER IT WILL BE UNABANDONED, FITTED WITH SCULTPURED ROCK WALLS, MACHINERY AND PERHAPS SOME ADDITIONAL TRACKAGE, TO BECOME AN ACTIVE INDUSTRY FOR THE RAILROAD. THUS IT IS KEPT OUT OF THE EYESORE CATEGORY WHILE MORE IMPORTANT CONSTRUCTION GOES FORWARD.

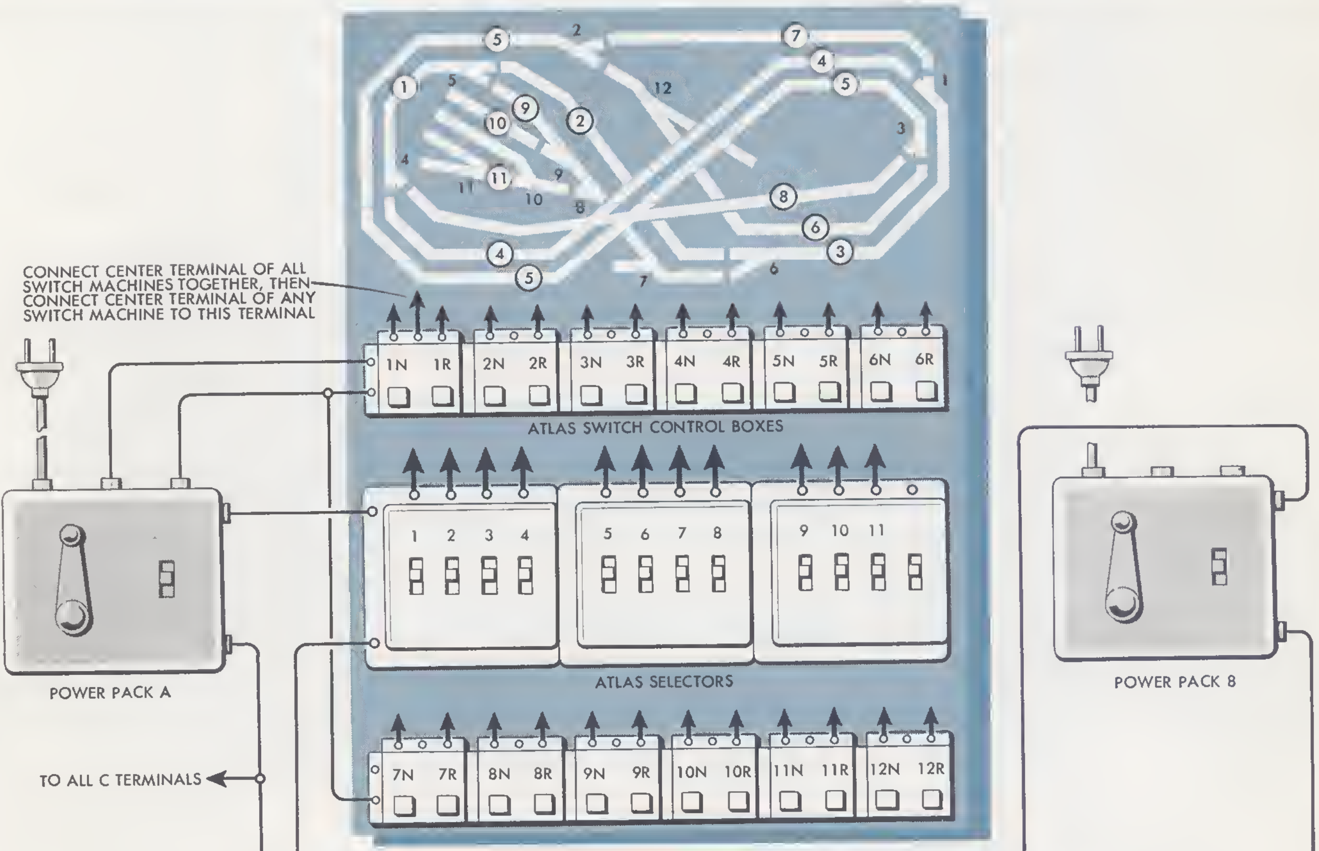
COMPLETING THE RAILROAD

Remaining stages are handled in the general manner described in connection with the other railroads in this book. At X (p. 30), a second layer of cork roadbed is used to bring the track up to grade; the cork is also used to build up short piers under the ends of the Atlas girder bridges.

The wiring diagram and control panel layout is given on page 39. After you have operated trains for a while you'll find what particular use of the spare block switch on the panel will be of most benefit. If you expect to disassemble the two halves of the railroad occasionally, mount the panel on the left (yard) half and run all wires from the other half to the panel via terminal blocks (or better yet, multiprong connectors such as Jones plugs) for easy separation and reconnection.



IT'S A GOOD IDEA TO WORK AT LEAST ONE ATLAS RERAILER SECTION INTO ANY LAYOUT SO THAT YOU CAN SWAP YOUR ROLLING STOCK AROUND. THE RERAILER IS DISGUISED AS A GRADE CROSSING BY FITTING A CARDBOARD ROADWAY UP TO IT AND PAINTING IT. ALTHOUGH THIS ROAD HAS NOT YET BEEN COMPLETELY BLENDED INTO THE SCENE BY PUTTYING NAIL HEADS AND CRACKS, ADDING CROSSING SIGNS AND TEXTURING THE ADJACENT SLOPES, IT ALREADY ADDS MUCH TO THE REALISM OF THIS SECTION.


1
2
3
4
5
6
7
8
9
10
11
12
CONNECT CENTER TERMINAL OF ALL SWITCH MACHINES TOGETHER, THEN CONNECT CENTER TERMINAL OF ANY SWITCH MACHINE TO THIS TERMINAL
1N 1R 2N 2R 3N 3R 4N 4R 5N 5R 6N 6R
ATLAS SWITCH CONTROL BOXES
1 2 3 4 5 6 7 8 9 10 11
ATLAS SELECTORS
POWER PACK A
POWER PACK B
TO ALL C TERMINALS
7N 7R 8N 8R 9N 9R 10N 10R 11N 11R 12N 12R

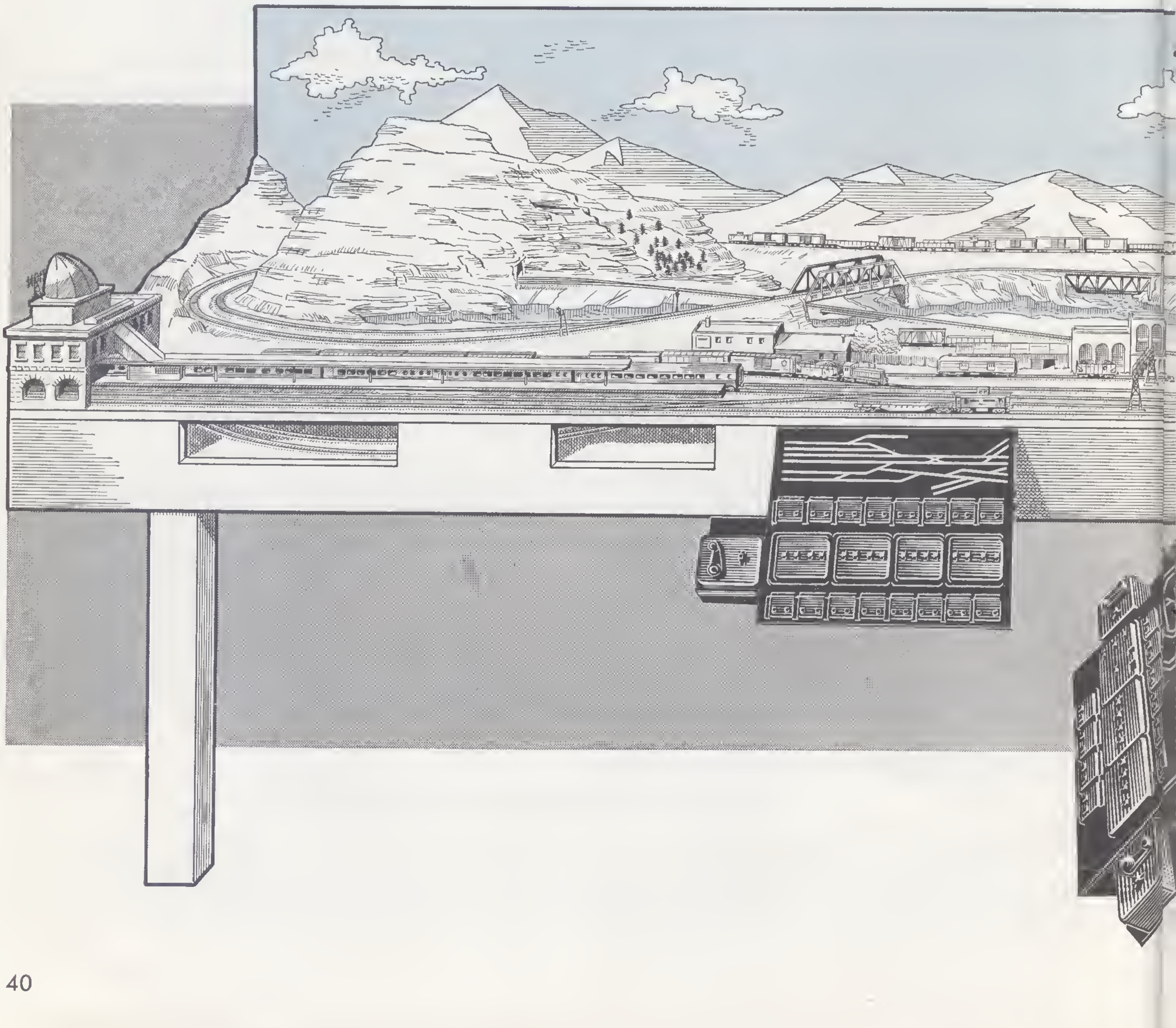
ALTHOUGH TRAINS CAN PASS THROUGH THE CONNECTING TRACKS BETWEEN THE LOBES OF THE MAIN LINE FIGURE-EIGHT AND REVERSE THEIR DIRECTION OF MOTION, THERE ARE NO REVERSING TRACKS HERE IN THE ELECTRICAL SENSE AND NO ATLAS CONTROLLERS ARE NEEDED UNLESS THE TURNTABLE IS ADDED. WIRE IT UP AS EXPLAINED IN THE RAILROAD A SECTION (PAGE 11) AND MAKE THE CONTROL PANEL DIAGRAM AS DETAILED ON PAGE 18 IN CONNECTION WITH RAILROAD B.

The Central Midland

In model railroading, as in many other things on this earth, you can sometimes get a great deal more satisfaction by deciding to expand just a little more. The Central Midland, compared to a four by eight foot pike with an aisleway on three sides, is about twice as wide and half again as long. It uses open-grid construction which is, if anything, slightly less expensive than the same size solid top. There's a good deal more hammering, sawing and fitting to do, and it is by no means a Christmas-season project to be started on the 17th of December and completed just as St. Nick slides down the chimney.

But look what you get for your first-class fare! There's a main line over one-and-a-third-scale miles long, mostly double track but with one section of single line to keep things interesting. There's a six-track yard long enough to hold whole trains, and a double-track wye leading into it that is a condensed but respectable replica of the complicated trackage leading into the St. Louis Union Station. All major curves on the main line and approach tracks are of 22″ radius, so you can operate almost all available types of HO equipment, smoothly and without excessive overhang and lurching. The open-grid construction allows your scenery to extend below track level as well as above, for complete freedom in duplicating the way in which a real railroad is fitted into the natural terrain (instead of vice versa.) There is room, right in front where it can be seen to best advantage, for a full-size engine terminal in which your most prized rolling stock can be displayed.

With Atlas Custom-Line trackage, construction and wiring of the Central Midland won't be so long a job as to



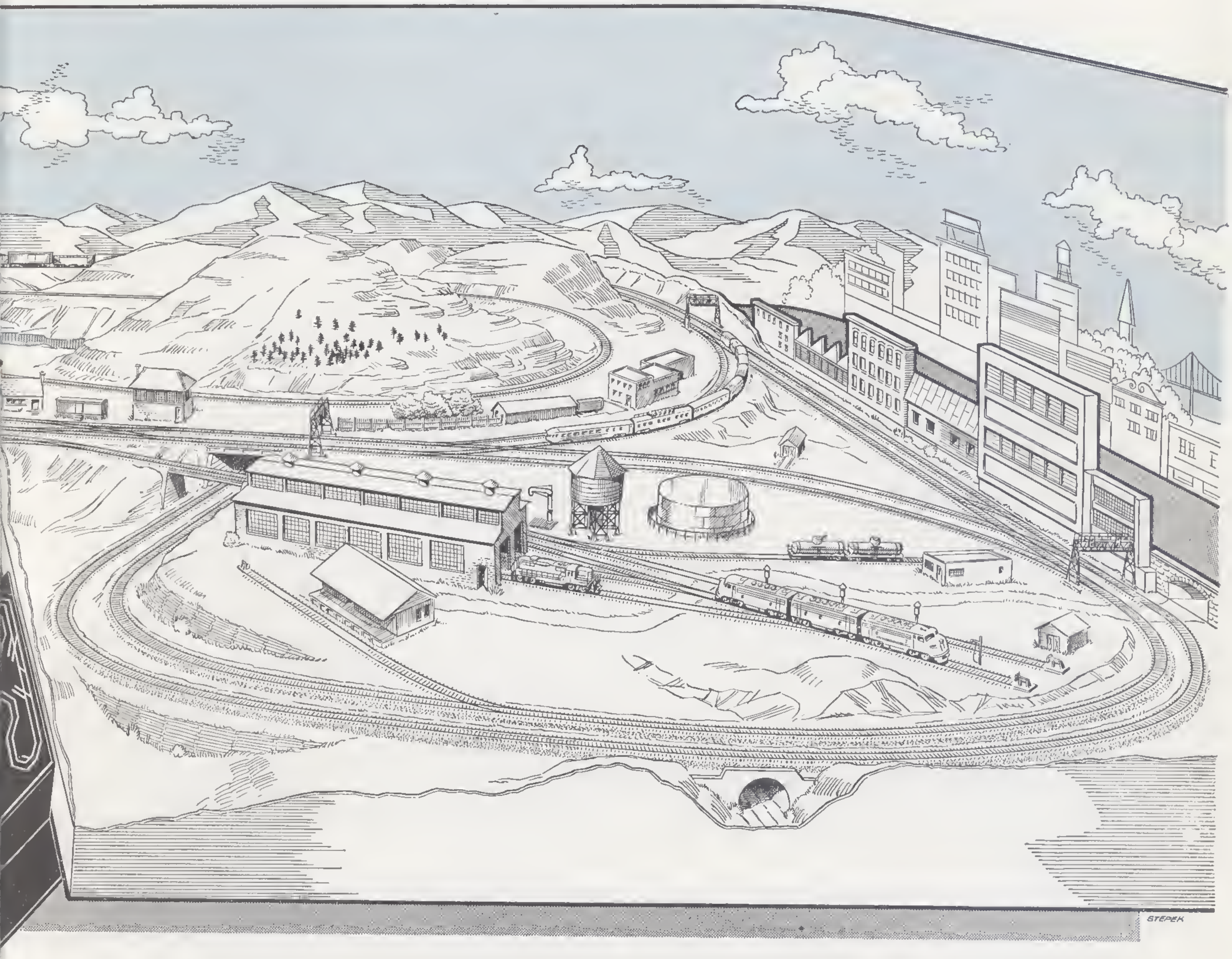
become tedious, but the sooner you kick off the project, the sooner the trains will be running, so let's get started. You can have a lot of fun just running trains over the main line, and it is a good idea to work any possible bugs out of the sections that will later be on the lower level, so the bill of material on page 42 lists the trackage required for just this portion, in case you want to buy and build this part first. It will cost nothing extra in most cases, and you'll be able to tell an evening or two before you run out of material, so you may also wish to buy the framing lumber in somewhat similar increments. You'll use up about 110 lineal feet of the 1 x 4 stock right at the start, though, so don't cut that part of it too thin.

Lay out and cut the principal framing members as called out on the Basic Grid Parts Table on page 44. These are screwed and nailed together as described on page 14. Select the straighter, sounder pieces of wood for these parts — you'll have plenty of opportunity to use the knottier pieces later on for risers and the shorter trackboard sections. Dimensions specifically called out on the grid drawing should be held fairly close — to the nearest eighth inch or so — but those not given can be obtained by scaling from the drawing, ¾" = 1' or one sixteenth inch to the inch if your prefer to think of it that way.

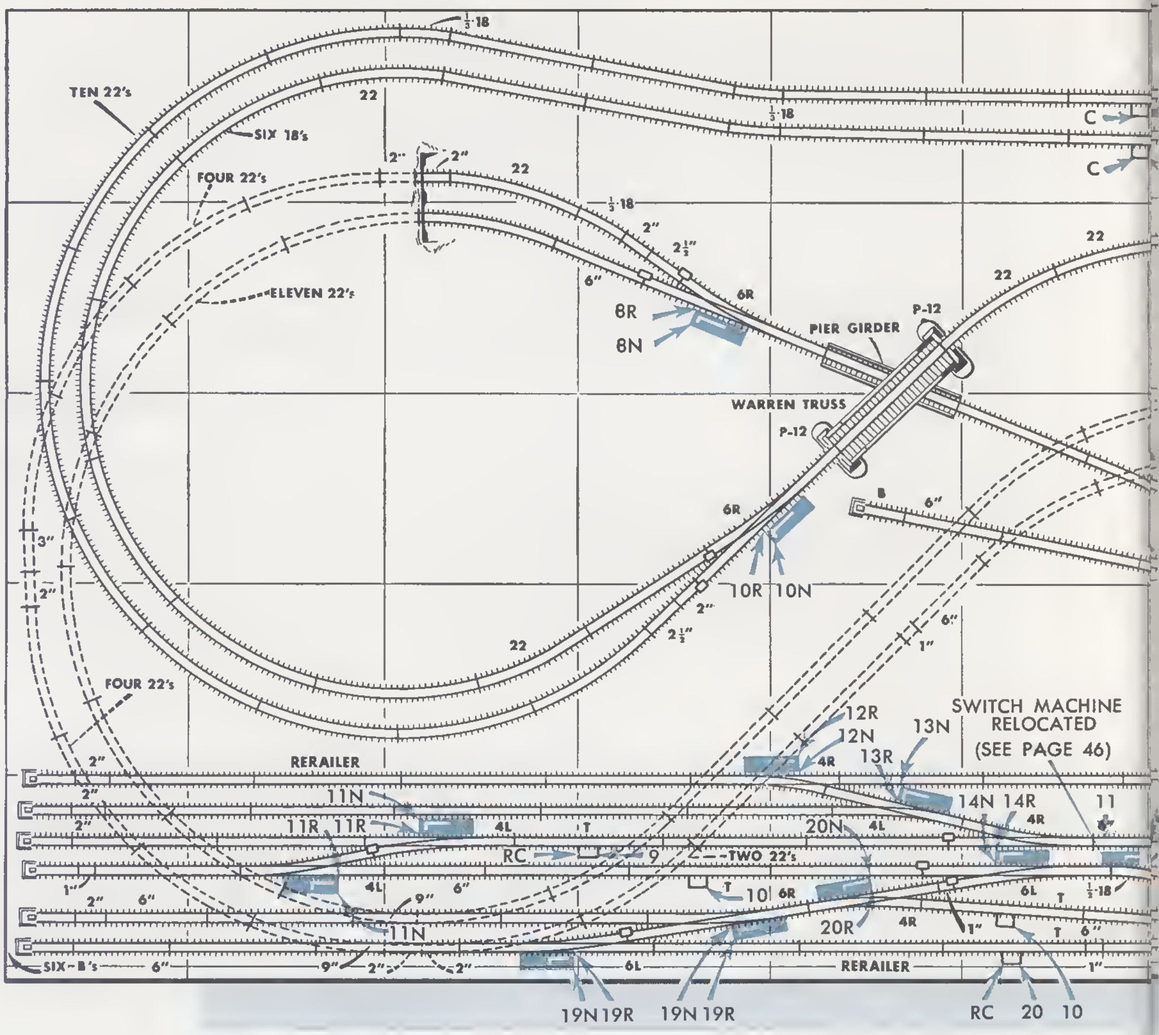
It's possible to design a railroad of this type down to the last piece of trackboard, lay out and cut each part, and put it together by dimension just like a steel bridge That's doing it the hard way, though, and we will take advantage of the easy assembly of the snap track to minimize measurements and lay out most parts to fit. The end result will be as good, and the chance of error is cut down.

Next, cut up the 4 x 8 ft. sheet of plywood as shown in the small diagram on page 44. Lay out the four resulting pieces on the grid, in numerical order. Line No. 1 up against the corner of the basic grid and tack it in a few places with the No. 4 nails, squaring up the grid as you do so in the way shown in connection with Railroad E on page 34. Next comes piece two, and then piece three, which will extend to the right-hand edge of the layout but must be located in the other direction by the 20" measurement given. Tack them down similarly. Piece four completes the first stage of construction.

Now, assemble the snap track for the main line on top of the grid. Don't bother about the exact location of any point with respect to the diagram until you have the whole system laid out. If the track bends down too much at any point because of the wide open spaces in the grid, just prop it up with one of the short pieces of 1 x 4 left over from the grid construction job. When it is all put together, start maneuvering it into position. It won't look exactly



RAILROAD F
SCALE:
1″ = 1′-0″
SEE PAGE 4
FOR TRACK
SYMBOLS



as in the diagram, but if there are any places where there appears to be something definitely amiss, check your assembly to be sure it has exactly the parts called for. An easy error to make is getting a 22″ radius section in the place of an 18″, or vice versa; for your convenience, the radius of each section is molded in the tie strip, on the under side near each end.

Also be on the lookout for kinks in the curved sections. The major ox-bows in the main line consist of 22″ radius sections, so you can check their roundness by measuring across the loops with a tape — they should, of course, be 44″ wide, center to center. Be sure that the track centers on curves are no closer than 2¼″ and that the outer track goes no closer to the edge of the layout than called for on the drawing. When you are satisfied with the arrangement, mark the center line location (judged by eye) on the grid at each point where a track crosses it.

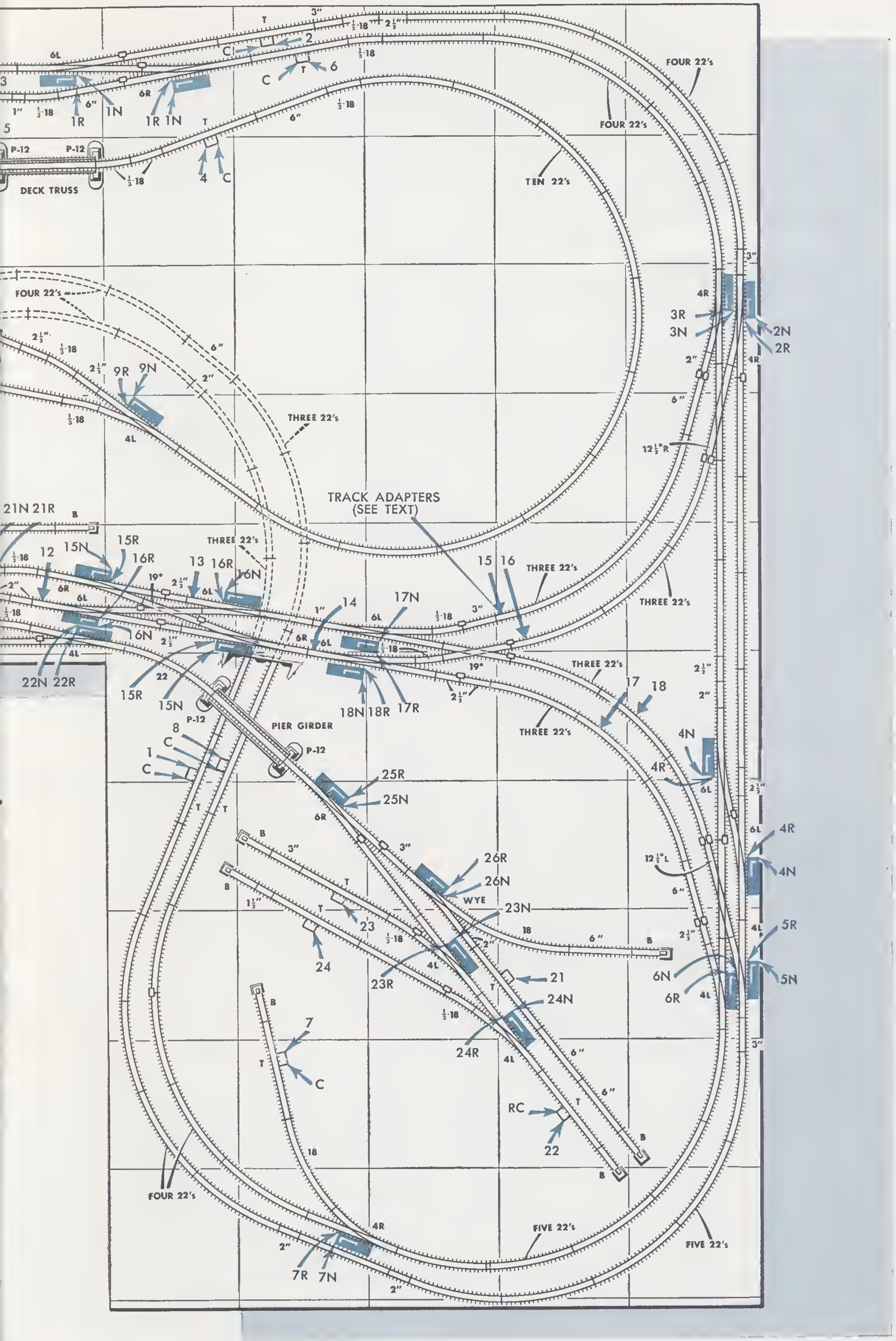
On the plywood sections, mark the center lines as illustrated on page 7, and be sure to mark the location of the plywood section itself on the grid for later reference. Take the track up carefully, leaving it in chunks of four or five pieces to save time and avoid taking apart and reuniting the rail joiners any more than is necessary, and lay it aside. Heavy up the center-line marks with a crayon so they won't get lost.

If you are also planning to construct the yard at this time, follow a similar procedure for it. Lay out the center distances for all the yard tracks at each end to insure that they are parallel and use string or straightedge to get the center lines straight. The rear four tracks are on two inch centers. The next pair are on 3¾″ centers (allowing space for a passenger platform) and the last two on 2¼″ spacing. Also mark the sections of plywood piece 2 to be cut away in accordance with the diagram, using the actual position of the adjacent trackage as a guide.

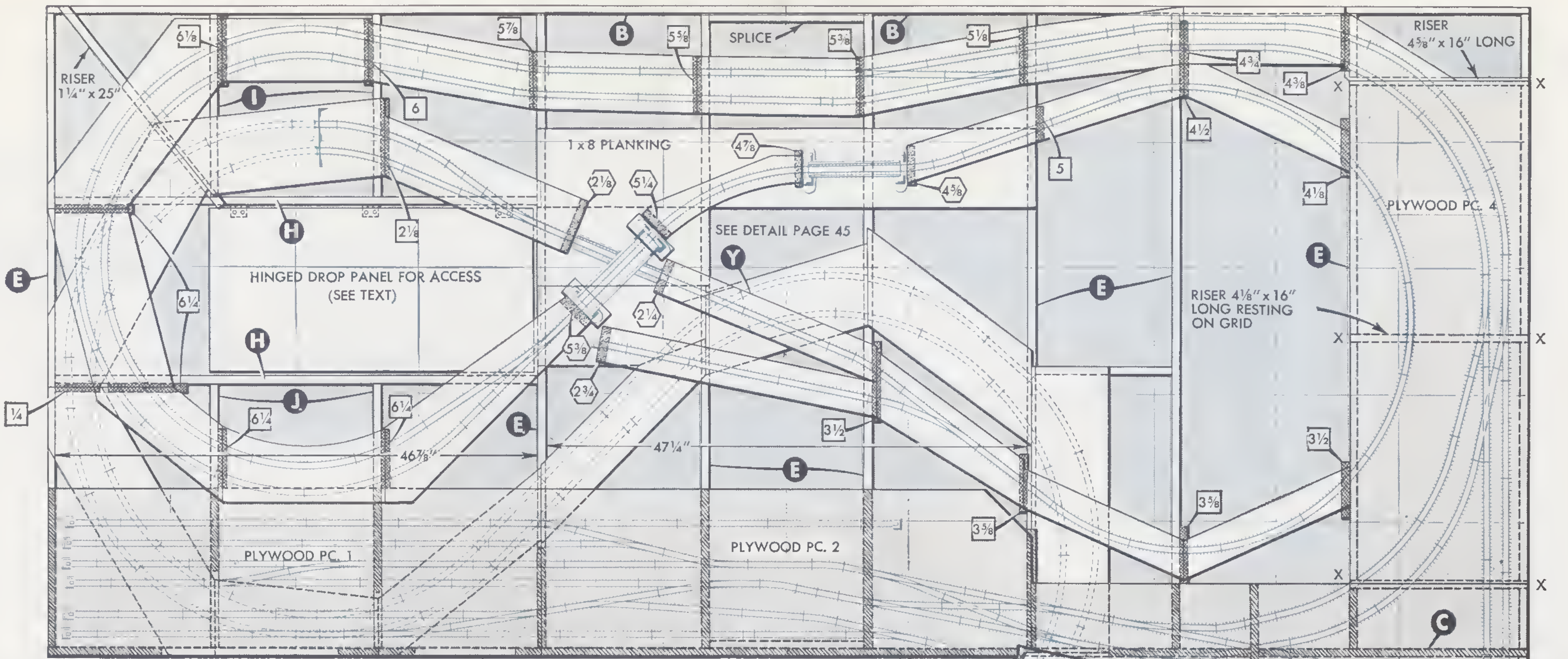
The engine terminal for the Central Midland is shown as an all-diesel affair. It can be converted to handle steam power by substituting the right type of fueling, ash disposal, water and sand facilities and can use the same style of engine house, since the wye tracks can be used to turn the locomotives around. You may wish to substitute a regular turntable and roundhouse and alter the trackage accordingly, so the track to the right of the pier girder bridge is called out separately in the bill of material under the "Engine Terminal" heading. Whichever way you decide, at this point plywood piece 3 should also be marked for cutting to accommodate the lower level track and the piers and bridges.

Now we're ready to start track support construction according to the open-grid plan. The general scheme is illustrated in the little perspective on p. 45. The position of risers for the various levels of track is indicated on the framing diagram as shown in the Key on page 44. They are of 1 x 4, 1 x 6 or 1 x 8 stock according to the number of tracks to be supported and the angle at which they cross. The height of each riser has been figured for you and is indicated as shown in the Key; note particularly what the point of reference is for each type of height symbol.

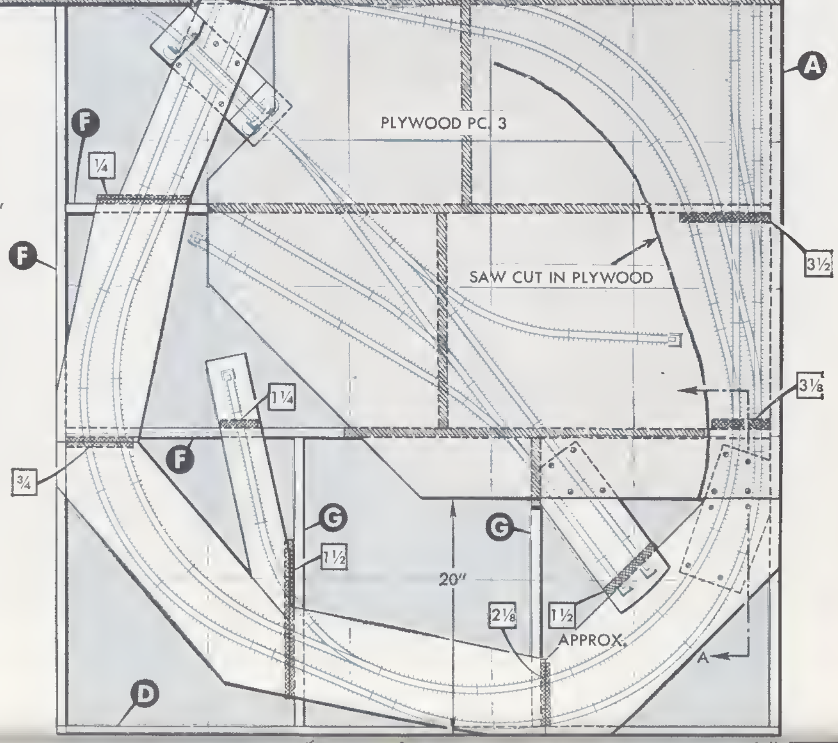
In laying out the risers, add the width of your grid members (approximately 3¾″ from 1 x 4 lumber, but it varies somewhat) to the indicated height of riser to get the over-all length to make each one. Locate them on the



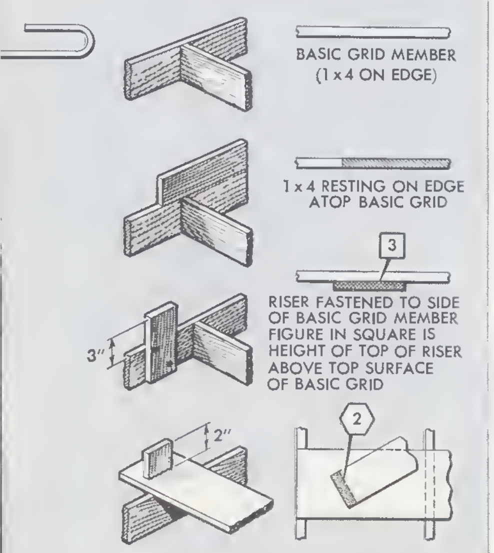
TRACK ADAPTERS (SEE TEXT)
DECK TRUSS
PIER GIRDER
P-12
WYE
FOUR 22's
TEN 22's
THREE 22's
FIVE 22's
1R
1N
2N
2R
3R
3N
4R
4N
5R
5N
6N
6R
7R
7N
9R
9N
15R
15N
16R
16N
17N
17R
18N
18R
21N
21R
22N
22R
23N
23R
24N
24R
25R
25N
26R
26N
RC
C
T
B
6L
6R
4L
19°
12½°R
12½°L
⅓·18
2½"
3"
2"
6"
1"
1½"
18



SCALE: ¾″ = 1′-0″ (1/16″ = 1″)

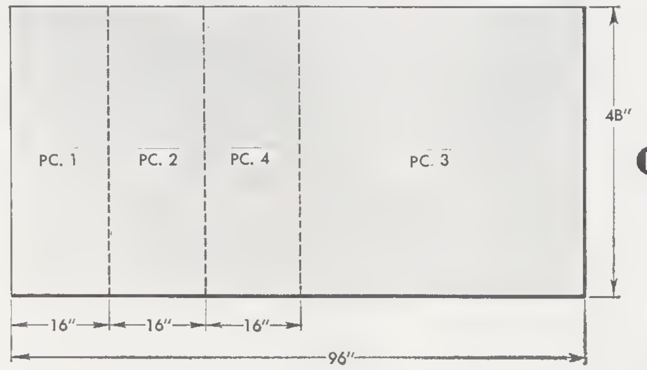


FRAMING KEY


BASIC GRID MEMBER (1 x 4 ON EDGE)
1 x 4 RESTING ON EDGE ATOP BASIC GRID
3
RISER FASTENED TO SIDE OF BASIC GRID MEMBER FIGURE IN SQUARE IS HEIGHT OF TOP OF RISER ABOVE TOP SURFACE OF BASIC GRID
3″
2″
2

SPACER SUPPORTING TRACK BOARD ABOVE 1″ PLANKING LAID ON BASIC GRID - FIGURE IN HEXAGON IS HEIGHT OF SPACER ABOVE TOP SURFACE OF PLANKING

PLYWOOD SECTIONS
(CUT FROM 4′ x B′, ⅜″ THICK)



PARTS TABLE — BASIC GRID
(ALL 1 x 4 MATERIAL)

PART	LENGTH	NO. REQ'D.	PART	LENGTH	NO. REQ'D.
A	120″ (10′)	1	F	59¼″	3
B	72″ (6′)	3	G	24″	2
C	71¼″	1	H	46⅞″	2
D	60¾″	1	I	18″	2
E	60″ (5′)	7	J	24¼″	2

Atlas Track Products

	Main Line	Yard	Eng. Term.	Total
9" straight section	34	26	2	62
6" straight section	6	7	3	16
Snap track kit	5	2	-	7
Straight terminal section	8	4	4	16
Bumper	2	7	5	14
Rerailer	-	2	-	2
Full section 18" radius	6	-	1	7
Third section 18" radius	12	5	2	19
Full section 22" radius	86	13	-	99
No. 4 right-hand turnout	3	3	-	6
No. 4 left-hand turnout	3	4	2	9
No. 6 right-hand turnout	3	3	1	7
No. 6 left-hand turnout	3	6	-	9
Wye turnout	-	-	1	1
12½° right-hand crossing	1	-	-	1
12½° left-hand crossing	1	-	-	1
19° crossing	-	2	-	2
Atlas rail joiners	1 box	2 boxes	-	3 boxes
Plastic rail joiners	2 dozen	1 dozen	-	3 dozen
Atlas track adapters	-	2 pkgs.	-	2 pkgs.

Atlas Piers and Bridges

	Main Line	Yard	Eng. Term.	Total
Pier girder	1	1	-	2
Deck truss bridge	1	-	-	1
Warren truss bridge	1	-	-	1
3" (No. 12) piers	4	2	-	6

Roadbed Material

	Main Line	Yard	Eng. Term.	Total
Atlas cork roadbed (3 ft. sections)	41*	15*	4*	60*
Atlas cork switch blocks (No. 4)	6	7	2	15
Atlas cork switch blocks (No. 6)	6	9	1	16
Atlas cork switch blocks (Wye)	-	-	1	1
⅝" or ¾" No. 18 or No. 19 flat-head wire nails	2 (¼ lb.) boxes	2 boxes	-	4 boxes

*If roadbed for turnouts is built up from regular stock as shown on page 4, omit switch blocks and obtain 47, 23 and 6 pieces of roadbed for main line, yard and engine terminal respectively, or a total of 76 pieces instead of 60.

Electrical Control Items

	Main Line	Yard	Eng. Term.	Total
Atlas Selector	2	4	-	6
Atlas Controller	1	-	-	1
Atlas remote-control switch machines	12	16	8	32
Atlas switch control boxes	10	12	4	26
One-train power supply unit with 16 volt a.c., 12 volt d.c. outputs, reversing switch, speed control and circuit breaker	2	1	-	3
Train power feed wire (No. 18 or No. 20, No. 18 preferred)	100 ft.	100 ft.	25 ft.	225 ft.
Switch machine control wire (No. 22 or heavier)	175 ft.	150 ft.	100 ft.	425 ft.

Foundation Material

⅜" plywood, 4 by 8 ft.	1 piece
1" x 4" dressed white pine, "C or better," random lengths 6 to 12 ft. (including some pieces 10 ft. long)	180 lineal ft.
1" x 6" dressed white pine, "C or better," random lengths 6 to 12 ft.	36 lineal ft.
1" x 8" dressed white pine, "C or better," random lengths 6 to 12 ft.	54 lineal ft.
2" x 2" fir, 8 ft. long	4 pieces†
Furring strip (1" x 2" nominal)	32 lineal ft.†

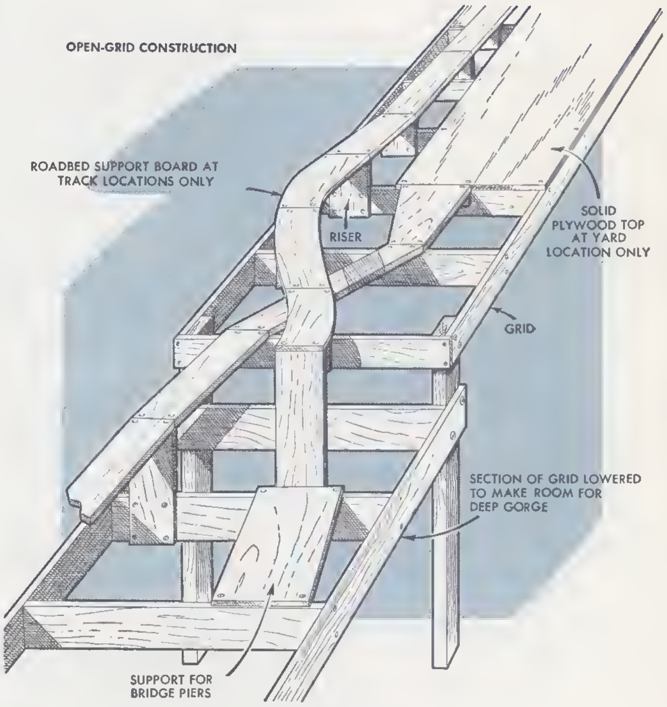
†For eight legs and diagonal bracing. Omit if other arrangements used for supporting railroad.

No. 12 flat-head wood screws 2½" long	6 dozen
No. 10 flat-head wood screws 1½" long	2 gross
No. 8 common nails	1 lb.
No. 4 finishing nails	1 lb.

Basic Scenery Material

Because of the wide variety of scenic treatments possible on a railroad of this size and type, no definite quantities of materials can be estimated. The bill of materials for Railroad E on page 36 lists the types of materials used for the basic scenery; for a larger railroad, these can be purchased on an "as needed" basis during construction. Other items required not listed because of probable individual variations include:

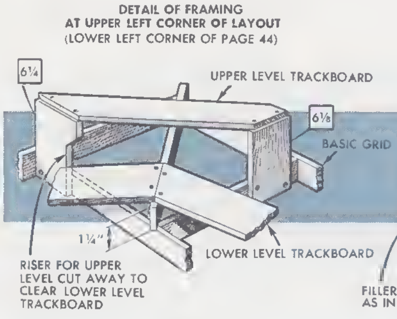
Scrap plywood for drop-leaf access hatch disguised as lake.
Hinges for the above.
Backdrop material and paint.

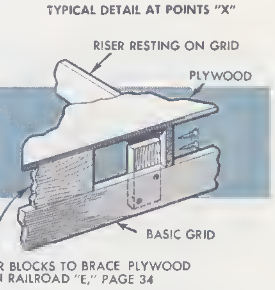

OPEN-GRID CONSTRUCTION
ROADBED SUPPORT BOARD AT TRACK LOCATIONS ONLY
RISER
SOLID PLYWOOD TOP AT YARD LOCATION ONLY
GRID
SECTION OF GRID LOWERED TO MAKE ROOM FOR DEEP GORGE
SUPPORT FOR BRIDGE PIERS

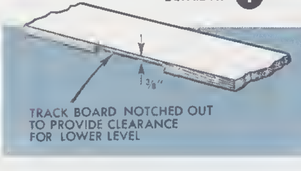
IN OPEN-GRID CONSTRUCTION THE BASIC FRAMEWORK IS AT THE LOWEST POINT OF THE TERRAIN IN THE VICINITY, USUALLY SOMEWHAT BELOW THE LOWEST TRACK ELEVATION. RISERS FROM THIS GRID SUPPORT TRACKBOARDS. IN YARDS OR OTHER CONGESTED AREAS A SOLID PLYWOOD TOP IS INSTALLED. SINCE RAILROADS OF THIS CONSTRUCTION ARE USUALLY TOO BIG TO BE PORTABLE AND IT IS EASY TO REACH INTERIOR POINTS FROM BELOW THE OPEN FRAMING, IT IS SATISFACTORY TO SCREW THE LEGS SEMI-PERMANENTLY TO THE ASSEMBLED GRID AND LAY TRACK WITH THE RAILROAD IN ITS NORMAL POSITION.

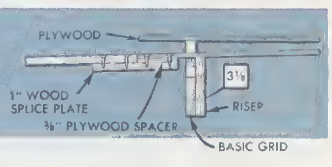
grid members in relation to your track center-line marks to correspond to the diagram — don't try to do it by measurement from the sides of the layout or other references, since all we are trying to do is to locate the roadbed support so that it will fit the plan of our track. Whether or not this matches the diagram exactly or not is unimportant. Tack the risers in place with the No. 4 finishing nails and then attach each of them permanently with two No. 10 screws.

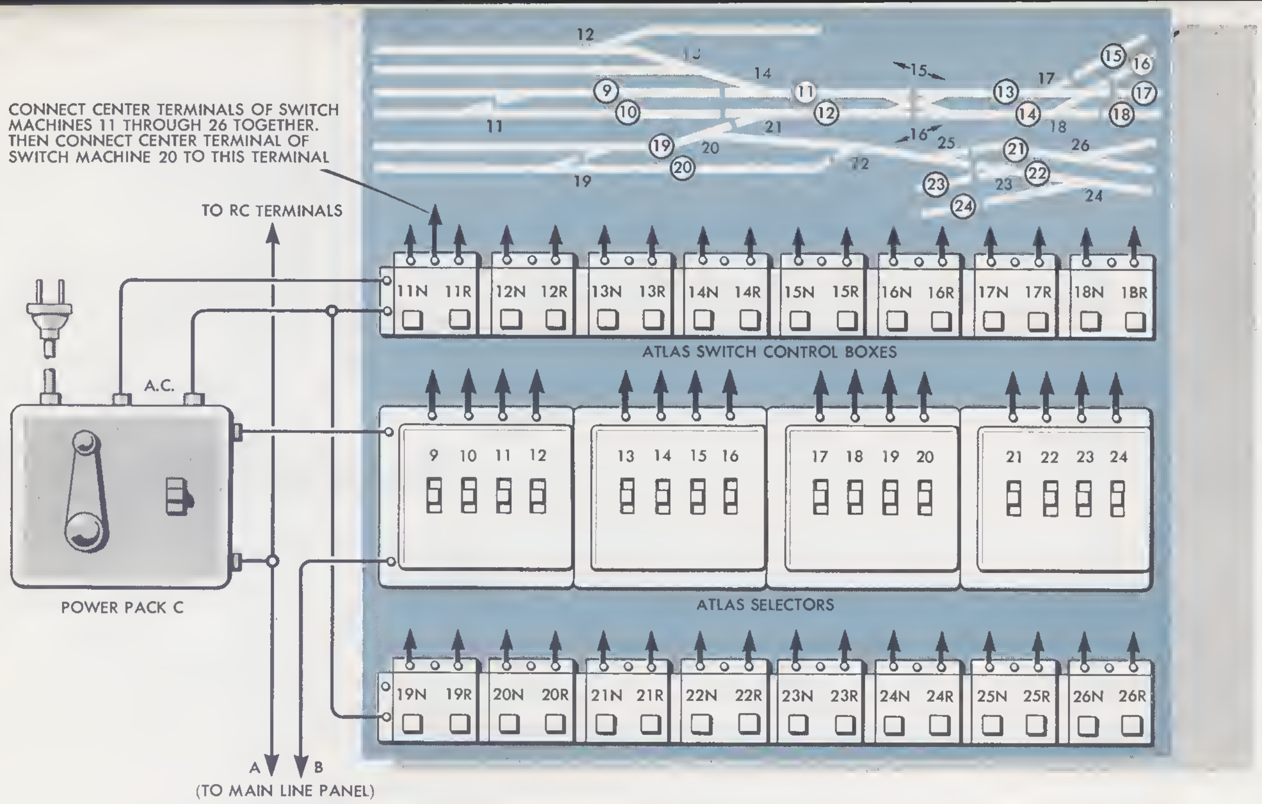
At some points the riser construction is varied to suit particular situations. In the center of the layout, the grid


DETAIL OF FRAMING AT UPPER LEFT CORNER OF LAYOUT (LOWER LEFT CORNER OF PAGE 44)
6¼
UPPER LEVEL TRACKBOARD
6⅛
BASIC GRID
1¼"
LOWER LEVEL TRACKBOARD
RISER FOR UPPER LEVEL CUT AWAY TO CLEAR LOWER LEVEL TRACKBOARD


TYPICAL DETAIL AT POINTS "X"
RISER RESTING ON GRID
PLYWOOD
BASIC GRID
FILLER BLOCKS TO BRACE PLYWOOD AS IN RAILROAD "E," PAGE 34


DETAIL AT Y
⅜"
TRACK BOARD NOTCHED OUT TO PROVIDE CLEARANCE FOR LOWER LEVEL




CONNECT CENTER TERMINALS OF SWITCH MACHINES 11 THROUGH 26 TOGETHER. THEN CONNECT CENTER TERMINAL OF SWITCH MACHINE 20 TO THIS TERMINAL
TO RC TERMINALS
A.C.
POWER PACK C
11N 11R 12N 12R 13N 13R 14N 14R 15N 15R 16N 16R 17N 17R 18N 18R
ATLAS SWITCH CONTROL BOXES
9 10 11 12
13 14 15 16
17 18 19 20
21 22 23 24
ATLAS SELECTORS
19N 19R 20N 20R 21N 21R 22N 22R 23N 23R 24N 24R 25N 25R 26N 26R
A B
(TO MAIN LINE PANEL)

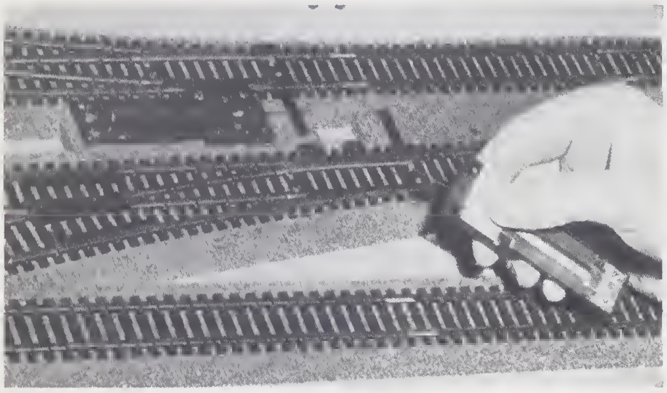
is planked over with 1 x 8 wood to furnish extra support for bridge piers at points not over frame members, and the risers on this planking. "Toe-nail" them in place by driving No. 4 nails through them at an angle and into the planking. Then run a No. 10 screw up into the riser from below for real security.

The track and its roadbed rest on trackboards, also of 1" nominal stock 4, 6 or 8 inches wide as appropriate. These are cut to fit. A good place to start is on the lower level at the left front of the layout, beneath the yard track location. At this point the trackboard rests directly on the grid, so you simply lay a piece of the stock on the grid in position so that it will support the tracks — using some sections of 22" radius to help you judge where the track will be between your center-line marks—and mark where it crosses the grid members. Cut each piece so that it extends half way across the grid member, leaving a ledge for the next piece to rest upon.

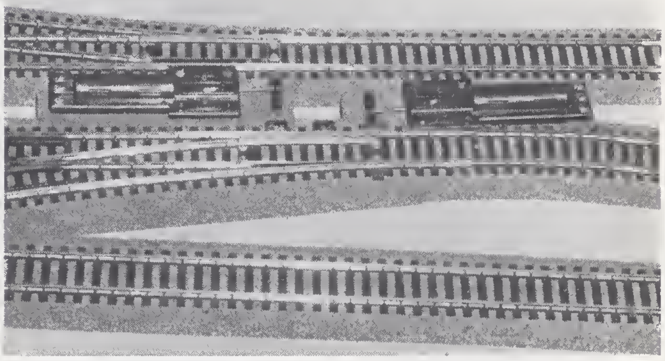
As you cut each piece of trackboard, fasten it down with a couple of the No. 4 nails and, using the appropriate pieces of track as a guide in conjunction with the center-line marks on the grid, draw the track center lines on its top surface. As you work your way along from the initial point, you will come to the first riser locations. Here the marking and cutting process is the same except that you end the trackboard segment at center of the riser instead of the center of the grid member.

Where the track is going to be out of sight in the completed railroad, the trackboards are simply made amply wide to serve as a foundation for the track. Where the track is going to be visible, make sure that the trackboard extends at least 1½" beyond the center line at all points. Wherever the scenery is going to be higher than the track, the straightedge of the trackboard is just left as is. Along the edge of the track where the scenery is going to be lower than the track — that is, where the track will be on a fill or embankment — the edge of the board should be cut to conform to the curvature of the track at a distance of about 1¼" from the track center line.

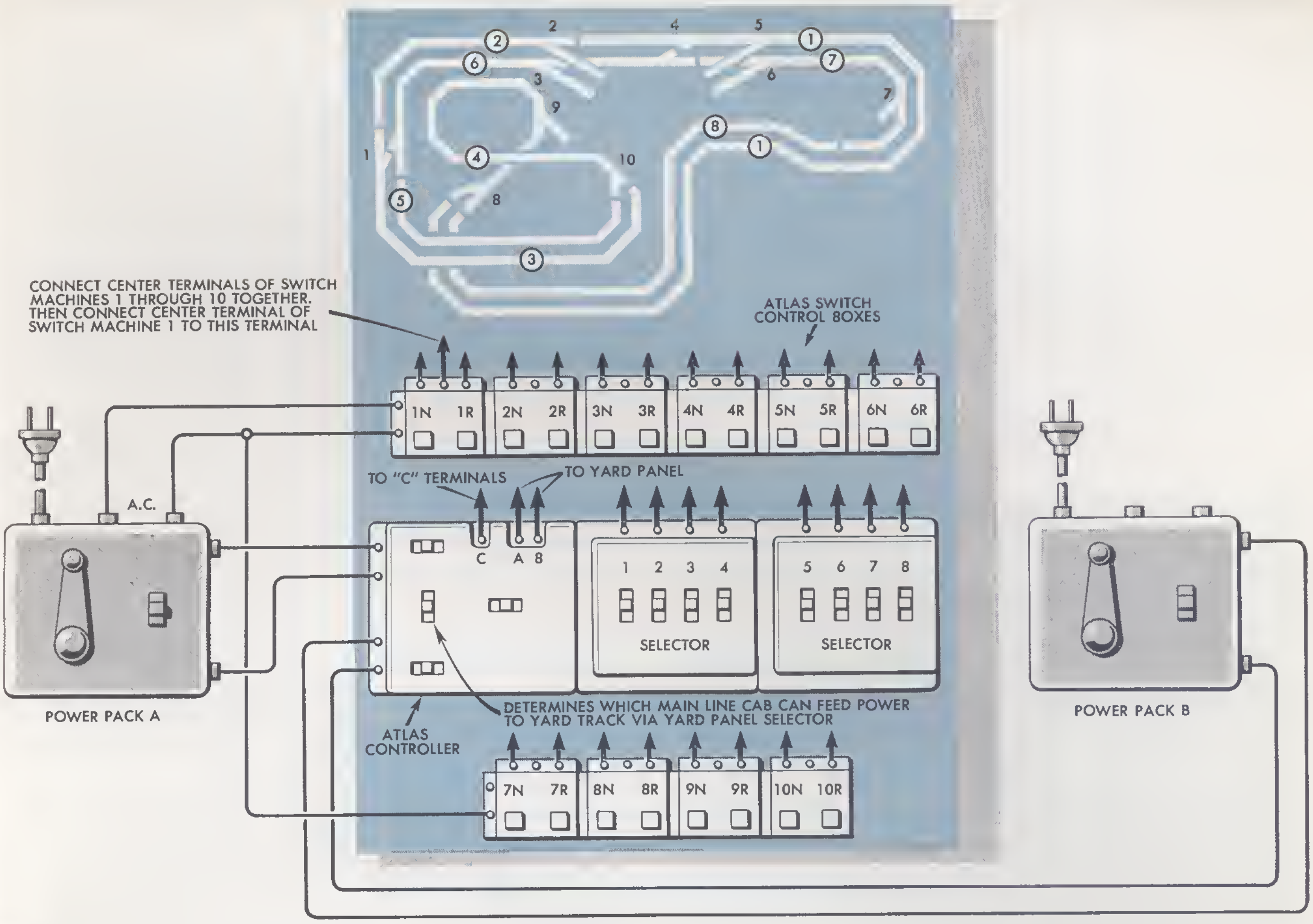
Installation of the trackboard can now be carried on over the entire main line, joining the 1" board to the plywood as shown in the special illustrations. Note that the plywood is supported by additional 1 x 4's lying atop the basic grid members. These spacer strips are not to be



TURNOUTS 14 AND 21 SWITCH MACHINES IN THE YARD THROAT WOULD INTERFERE IF BOTH WERE ATTACHED IN THE REGULAR POSITION. FILL SPACE BETWEEN THE TRACKS WITH CORK ROADBED AND FASTEN THE MACHINE ON TURNOUT 14 IN THE NORMAL POSITION. CUT A CARDBOARD SHIM (ABOUT 1/16" STOCK) FOR MACHINE 21.



THE MACHINE FOR TURNOUT 21 IS SCREWED DOWN (TWO NO. 4 ROUND-HEAD WOOD SCREWS ABOUT ½" LONG) IN REVERSED POSITION. LOCATE IT AGAINST THE RAIL AND THE SAME DISTANCE FROM THE THROW ROD AS IN NORMAL POSITION. CHECK BY COUNTING TIES. WIRING DIAGRAMS ALLOW FOR THE CHANGE.


2
4
5
②
①
⑥
⑦
3
6
9
7
⑧
①
1
④
10
⑤
8
③
CONNECT CENTER TERMINALS OF SWITCH MACHINES 1 THROUGH 10 TOGETHER. THEN CONNECT CENTER TERMINAL OF SWITCH MACHINE 1 TO THIS TERMINAL
ATLAS SWITCH CONTROL BOXES
1N 1R
2N 2R
3N 3R
4N 4R
5N 5R
6N 6R
A.C.
TO "C" TERMINALS
TO YARD PANEL
C A B
1 2 3 4
SELECTOR
5 6 7 8
SELECTOR
POWER PACK A
POWER PACK B
DETERMINES WHICH MAIN LINE CAB CAN FEED POWER TO YARD TRACK VIA YARD PANEL SELECTOR
ATLAS CONTROLLER
7N 7R
8N 8R
9N 9R
10N 10R

fastened in place until the lower-level trackage has been installed, unless you want to get in Egbert's fix (page 3), so think before you nail.

The trackboard segments should have at least one No. 10 screw at each end holding them to the risers. If a piece of trackboard is slightly warped, put the screws through the corners that tend to pop up so that they will draw the board down flat. In case of any doubt as to the solidity of the construction, put in plenty of screws at this time, since later warpage in a trackboard will raise cain with the smoothness of the track and may be hard to correct without doing major violence to the scenery.

Tracklaying itself is the same as described in connection with construction of the other railroads, the cork being laid against the center line, one side at a time, with the flathead nails. If there is any roughness in going from one section of trackboard to another, use cardboard shims under the roadbed to smooth it out Don't forget to attach the switch machines to the turnouts before fastening the track down, and locate plastic rail joiners at the points indicated.

It's also a time saver to paint the trackboard and plywood, keeping clear of the center lines, before laying the roadbed. Use some flat color typical of the countryside through which your railroad passes — gray or brown — or else a flat black to represent a cinder shoulder beside the ballast. This prepainting will avoid having to carefully paint up to the edge of the cork later on.

WIRING THE CENTRAL MIDLAND

The Central Midland's main line is basically double track, with one single-track section across the bridges in the center to keep you from just turning two trains on and letting them run themselves. There is another interesting little complication to keep you on your toes; the inner track on the upper level at the left-hand end of the railroad is of 18" radius, so if you have some rolling stock (such as a train of full-length passenger equipment) that won't go around this tighter curve, it will be necessary for you as the dispatcher to remember to use the crossover at the center rear to keep that train on the outer track through that section. This crossover also will allow maneuvers in which one train overtakes another by using the left-hand track for part of the run.

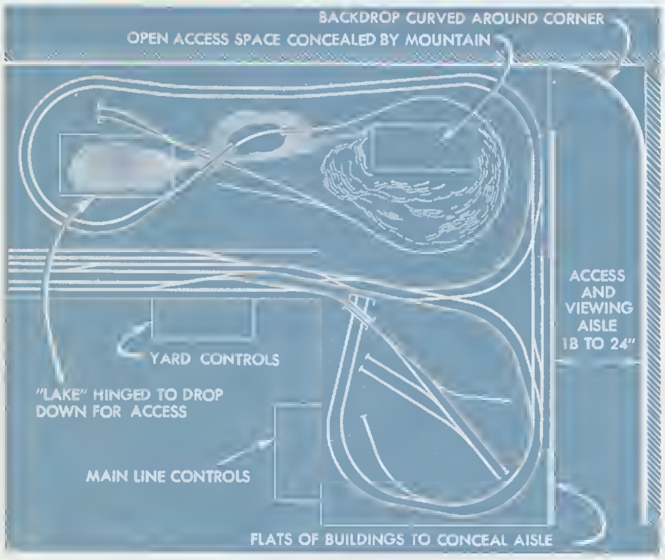
Since two cabs will normally be in use running mainline trains, a third power pack has been added to operate the yard switcher. Standard Atlas controllers and selectors are so connected that either mainline cab can be used to run its train into any part of the yard. Since the selector switches on the yard panel cannot be in more than one position at a time, you are automatically prevented from connecting the same piece of track to more than one cab at a time.

The entire yard is located on a "reversing section" in the electrical sense, since it is the stem of a wye track which leads into the main line in two directions. This causes no complications, however, once the insulating joints are located as shown. The reversing switch at the center right of the Atlas controller on the mainline control panel is the key to the situation: it is thrown in one direction when a train is to enter or leave the yard by the upper leg of the wye and the other way if the lower leg is used. Engines powered by the yard cab can use either leg of the wye as a tail track on which to move while switching cars in and out of the yard tracks, but cannot go out onto the main line unless switched over to the control of a mainline cab.

As is the case in Railroad B, one switch control box is used to control both turnouts in a crossover. The scissors or double crossover at the yard throat lets a train go directly from any yard track to either mainline track in either direction, so you can easily keep four men happily occupied running the railroad — three engineers, and a towerman lining up switches in the wye and throat.

To wire up the railroad, simply connect up corresponding terminal numbers on the control panels to the track and switch machine terminals. The physical location of the wires is much easier on an open-grid layout, since they can be neatly routed in cabled form on top of the grid but below the trackboard. Because this is a fairly large railroad, some of the more distant "C" terminals have been shown with extra wires directly to them, to improve the reliability of the wiring system and prevent any voltage drop.

At several points in the throat and wye areas, there is no room for regular terminal sections to provide power to sections which must be electrically separated. At these points Atlas track adapter solderless connections are used. For easiest and neatest connections, drill holes through the plywood at their locations before fastening track.


BACKDROP CURVED AROUND CORNER
OPEN ACCESS SPACE CONCEALED BY MOUNTAIN
ACCESS AND VIEWING AISLE 18 TO 24"
YARD CONTROLS
"LAKE" HINGED TO DROP DOWN FOR ACCESS
MAIN LINE CONTROLS
FLATS OF BUILDINGS TO CONCEAL AISLE

SCENICKING THE CENTRAL MIDLAND

The way you scenic a railroad of this type depends a lot on the directions from which it can be viewed. As shown in the diagram above, it is strongly recommended that an aisleway be left at the right side of the layout and that the rear be placed against a wall with a backdrop. This makes the trackwork of the wye accessible and allows interesting views of the yard throat and engine terminal. The way in which the aisleway itself can be hidden is shown in the perspective on pages 40 and 41, which is drawn from higher than the normal viewing angle.

A suitable backdrop foundation material which can be hung in a curve around the corner is oilcloth. The back (rough) side can be painted with theatrical scenery colors if you are anything at all of an artist (or have a friend who is), or the commercially available mountain-farmland-urban backdrop sections will make a very suitable scene.

The three-dimensional scenery on the Central Midland is constructed from screen wire and plaster mix in the way described for Railroad E (pages 35-39), with similar corrugated cardboard framing if you wish. In this case, the principal frames, with corrugations running in the vertical direction, are nailed to the grid members and then supplemented with cross members held to them with No. 8 common nails.

If you have laid out the trackboard as recommended, you will have a ledge along the track at all points to which the scenery screen wire can be fastened with staples. Be very careful not to let the screen wire touch the rail at any point or come in contact with any track or switch machine terminals or wiring. If you do, you may get some of the most baffling short circuits you ever hunted as the current happily flits from one end of the railroad to the other via the scenery.

It is highly desirable to have access to the middle of the layout, as it's a mighty long reach to that back track if you pile up a train there. The framing has been designed so as to allow for an access hatch at the left which can be readily covered with a plywood drop panel hinged at the rear. This panel is given the blue paint and varnish treatment described in connection with the river on Railroad E, covered with waxed paper and installed.

The screen wire scenery base is then brought down near to its surface and turned under, forming the rough contours of the bank of a pond or lake. The plaster mix is then applied normally to form the finished bank and suitably painted. The waxed paper keeps it from adhering to the "lake," leaving a barely detectable joint between fixed and movable portions of the scenery. The edge of this bank should be fairly steep, of course, as it is exposed when the drop panel is open and a feather edge would not last long. Where the lake connects with the river that flows under and gives reason for the railroad bridges, the joint can be hidden by a foot bridge or a dam.

At the right end of the layout, access can be provided unobtrusively by leaving the rear of the mountain open.

Scenery on an open-grid layout can be much more true to life because it need have no entirely flat areas. This may lead to one source of difficulty, though, which can defeat the realism. This is the matter of locating buildings in scenicked areas. If you try to set a flat-based building down on such an irregular surface, you will get an unintentional "shanty town" effect as big gaps show between the ground and the building's supposedly solid foundation. The way to avoid this is to figure out before you install the screen wire where you expect to locate buildings. Set a thick board, the size of the building foundation, into the scenery framework at this point. Bring the screen wire and plaster right up against this foundation — build it in solidly. When it is painted like a foundation and the building installed above it, you've got yourself a scenic asset instead of a liability.

The Central Midland won't be completed in a week, a month or, very likely, a year. However, it will provide exciting operation as soon as the main line is down. If you have done enough model railroading to know that it is really the hobby for you, shoot for something really worth while and build a railroad of this degree of advancement — you'll be glad you did!

ATLAS

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